FINAL REPORT

PRIVILEGED ATTORNEY/CLIENT COMMUNICATION
PREPARED IN ANTICIPATION OF LITIGATION
ATTORNEY WORK PRODUCT

PHASE II SITE ASSESSMENT

CONSTRUCTION AREA

OMAHA SHOPS

Prepared for
Union Pacific Railroad Company
Omaha, Nebraska
December 1995

Woodward-Clyde

101 South 108th Avenue
Omaha, Nebraska 68154

W-C Project 91MC204

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1.0
INTRODUCTION

1.1 PROJECT BACKGROUND

The Union Pacific Railroad Company (UPRR) Omaha Shops are located north of downtown Omaha in Douglas County, Nebraska. UPRR is in the process of closing operations at the facility. Locomotive repair and maintenance activities at the Omaha Shops were ended in 1988. Limited rail car maintenance activities remain. UPRR has contracted Woodward-Clyde Consultants (WCC) to provide planning and engineering services for a Phase II Site Assessment (SA). This project is a follow-up study to investigations done for UPRR between 1987 and 1990 by United States Pollution Control Inc. (USPCI), SOS International, Terracon Consultants EC Inc., and HDR Engineering, Inc.

In December 1992, the Omaha Shops property became a candidate site for construction of an automobile assembly facility. Key elements of the development plan for the site included construction of a large manufacturing facility building and relocation of existing large-diameter sewers underlying the site. UPRR contracted WCC to investigate the area of the Omaha Shops property that would be affected by the proposed automobile manufacturing facility construction activities. The area investigated was identified as the "Construction Area" and it includes an area defined by the proposed manufacturing facility building footprint and the proposed sewer relocation corridor.

1.2 PURPOSE

The purpose of this investigation is to evaluate the areal extent of contaminated soil in the Construction Area of the Omaha Shops. The scope of activities was based on the findings of previous site investigations, and the additional fieldwork was intended to supplement previously collected data.

1.3 SCOPE OF SERVICES

Additional soil data were collected in the Construction Area to meet the following objectives:

- Identify and evaluate potential soil contamination
- Estimate the horizontal and vertical extent of identified soil contamination

Five soil borings were located along the proposed centerline of the relocated sewer. Data from these soil borings will be used to evaluate whether special procedures or precautions will be required for the sewer relocation construction project. A total of 14 soil borings were drilled in the proposed building area. Data from these soil borings will be used to evaluate whether special procedures or precautions will be required for building construction.

2.0
SITE DESCRIPTION

2.1 LOCATION

The Omaha Shops are located at 9th and Webster Streets in Omaha, Nebraska. The site encompasses approximately 184 acres, lying immediately west of the Missouri River in the Missouri River flood plain (Figure 2-1). The Omaha Shops include various buildings and production support areas each having a function in past operations of the facility.

The Omaha Shops were in operation for approximately 100 years, with principal functions as a railroad fueling facility, repair shop, paint shop, and car body repair shop for UPRR's locomotive and car fleet.

The Construction Area occupies about 100 acres in the central part of the Omaha Shops. The Construction Area includes a portion of the Omaha Shops property that may be disturbed by future construction. Possible construction could include future buildings and relocation of a large sewer. Major existing buildings located within the limits of the Construction Area, as defined by this plan, include the Fabrication Shop, Print Shop, Wheel Shop, Car Shop, Steel Shop, and Wood Mill Building. The area also includes portions of the Traction Motor Shop and Power House. Portions of the Construction Area were identified and evaluated as operational areas in the Phase I Site Assessment (HDR, 1990).

The ground surface at the site is nearly level. Surface drainage is primarily to the east, toward the Missouri River. Surface elevation of the site is approximately 985 feet above mean sea level (msl). The Omaha Shops are about 10 to 15 feet above normal river stage.

2.2 GEOLOGY AND HYDROGEOLOGY

Shallow unconsolidated deposits at the site are characterized by fill and alluvium. Previous investigations at and near the site indicate that fill ranges in thickness from 1 to 9 feet with the thickest fill near the river channel. The fill consists of cinders, bricks, glass, metal, and gravel in a matrix of silt (HDR, 1990). Alluvial deposits consisting of interbedded clay, silt,

sand and gravel underlie the fill. The alluvial sequence lies above bedrock which is about 20 to 50 feet below the ground surface (UPRR, 1984).

Bedrock is of the Pennsylvanian age and consists of alternating beds of limestone and shale. Three different formations are normally encountered in this location; the Wyandotte Limestone, the Lane Shale, and the Iola Limestone. These formations are of the Kansas City group of the Missouri series (UPRR, 1984).

Shallow groundwater is encountered at the site at depths ranging from approximately 3 to 15 feet below ground surface. Groundwater appears to flow northeasterly, with a calculated hydraulic gradient in the direction of flow estimated to be about 0.01 feet per foot (HDR, 1990). The alluvial sediments are expected to have a low hydraulic conductivity with a range of 0.3 to 0.003 feet per day. Hydraulic recharge is likely from surface infiltration due to the porous characteristics of the surface fill materials (UPRR, 1984). Figure 2-2 shows the shallow potentiometric surface measured in March 1992.

2.3 PREVIOUS STUDIES AND INVESTIGATIONS

Studies and investigations previously completed at the Omaha Shops are briefly described below.

2.3.1 PCB Transformers

In 1987 and 1988 United States Pollution Control Inc. (USPCI) completed a PCB electrical transformer fluid survey at the Omaha Shops. According to the survey results, 57 transformers were identified as containing PCB fluids. Concentrations ranged from 0.3 ppm to 932 ppm PCBs. At the time of the survey, 12 of the 57 transformers were in service; three of the 12 transformers contained PCBs at concentrations greater than 240 ppm (241, 254, and 440 ppm), and the remaining nine transformers had PCB concentrations of less than 60 ppm (49, 48, 51, 56, 46, 52, 39, 48, 51 ppm). The remaining 45 transformers identified as containing PCB fluids were removed from service or disposed of by USPCI.

2.3.2 Asbestos Survey

SOS International (SOS) completed an asbestos survey of the Omaha Shops in 1988. SOS collected 14 samples of suspected asbestos-containing building materials (ACBM). Six of these samples tested positive for asbestos with concentrations ranging from 35% to 90% Chrysotile asbestos.

Investigation of outside steam line insulation included quantifying lengths of pipe and collecting ten samples. Five of the insulation samples contained asbestos. Examination of hot water line insulation included quantifying lengths of pipe and collecting one sample, which contained 90% Chrysotile asbestos.

The Power House pipe insulation and boiler area sampling involved the collection of two samples, both of which were found not to contain asbestos. A spray-applied material observed on the walls of Store No. 2 was suspected of containing asbestos, and one sample was collected. This sample was found not to contain asbestos.

2.3.3 Preliminary Site Assessment

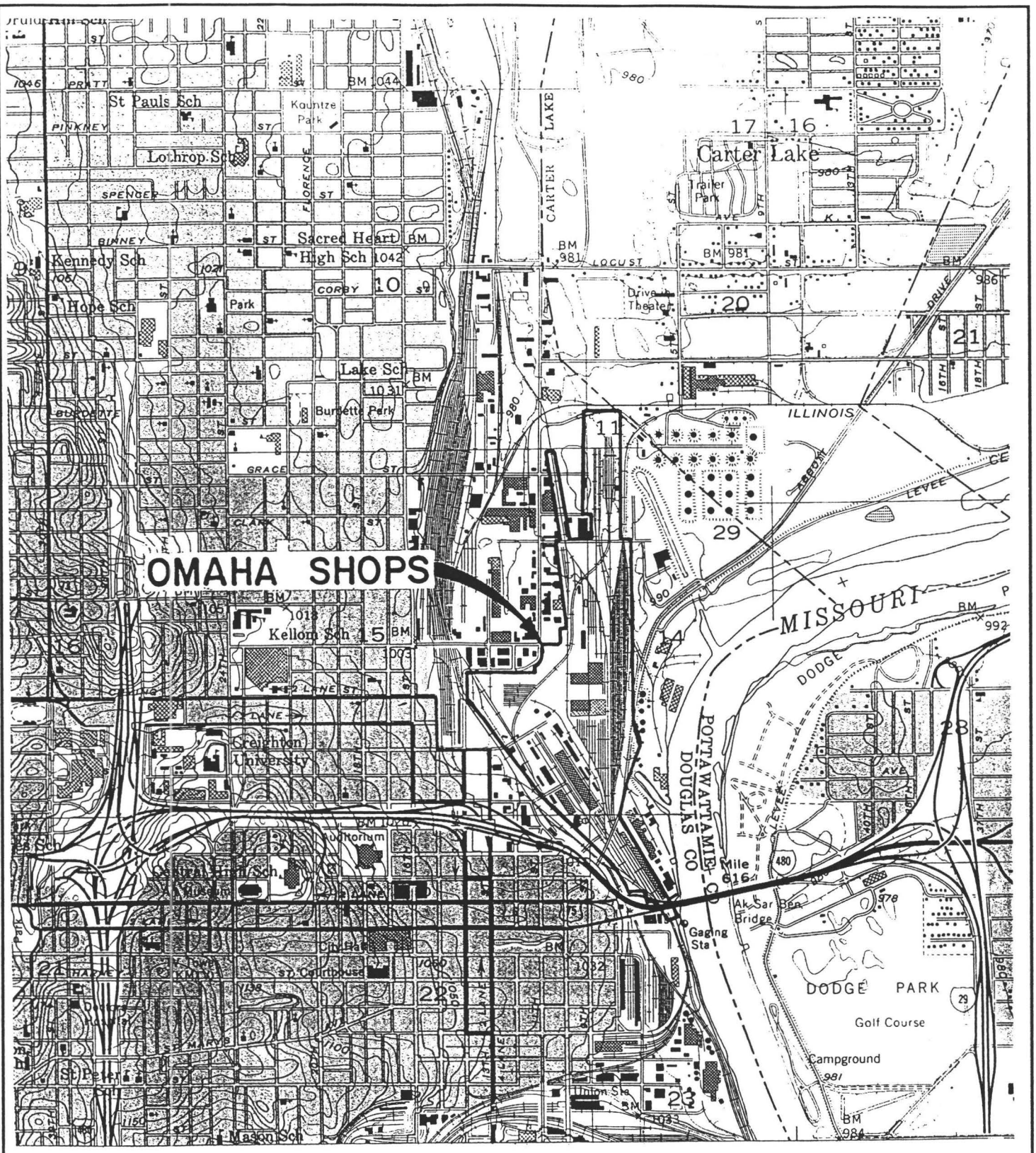
USPCI completed a facility walk-through and historical records search for the Omaha Shops in 1988 (USPCI, 1988). Results of the survey identified a number of current and historical areas which were considered to be areas of potential environmental concern. These areas were incorporated into a follow-up site assessment by HDR as focal points for further investigation activities.

2.3.4 Diesel Fuel Recovery System

Floating petroleum product (diesel fuel) on the groundwater near the south end of the Omaha Shops was discovered during construction of the Abbott Drive overpass. In response to this situation, UPRR installed a diesel fuel recovery system in this area in 1988 (Terracon, 1988). A total of 13 recovery wells were installed at depths of approximately 27 to 28 feet. The system continues to operate, removing approximately 1,000 gallons of diesel fuel per month (Terracon, 1992).

2.3.5 Phase I Site Assessment

HDR Engineering, Inc. completed an environmental site assessment of the Omaha Shops in 1989 and 1990. Field investigations included hand auger borings, truck-mounted drill rig borings, monitoring well installation and sampling, and soil vapor analysis. The investigation identified 16 areas of possible contamination. Groundwater and soil contaminant levels were compared to selected maximum allowable levels to evaluate whether contaminant levels warranted further action.



NEBRASKA

QUADRANGLE LOCATION

FROM OMAHA NORTH, NE.-IA. USGS TOPOGRAPHIC MAP 1956, PHOTOREVISED 1984.

0 2000 2000 4000

APPROXIMATE SCALE IN FEET

OMAHA SHOPS LOCATION

PHASE II SITE ASSESSMENT
OMAHA SHOPS
UNION PACIFIC RAILROAD COMPANY

DRN BY	JWB	DATE	11/03/92	PROJECT NO.	FIG. NO.
CHK'D BY	JAW	REVISION	0	91MC204	2-1

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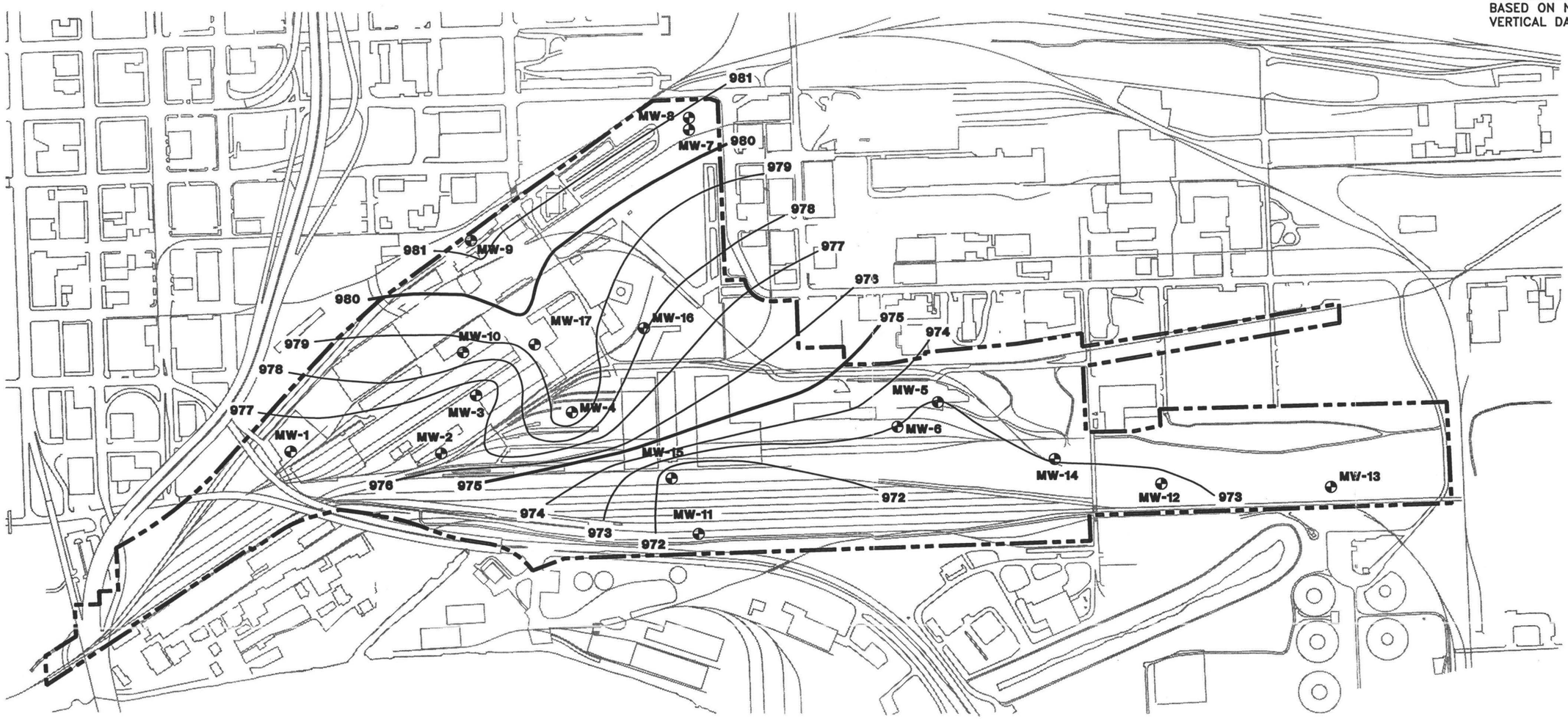
LEGEND

- MW-13 — EXISTING MONITORING WELL
- PROPERTY LINE
- STRUCTURES
- RAILROAD TRACK

NOTE: GROUNDWATER LEVELS WERE MEASURED ON MARCH 4, 1992
GROUNDWATER CONTOUR ELEVATIONS BASED ON NATIONAL GEODETIC VERTICAL DATUM OF 1929



600 0 600 1200

APPROXIMATE SCALE IN FEET

SHALLOW POTENTIOMETRIC SURFACE MARCH 1992

PHASE II SITE ASSESSMENT
OMAHA SHOPS
UNION PACIFIC RAILROAD COMPANY

DRN BY JWB	DATE 11/03/92	PROJECT NO.	FIG. NO.
CHK'D BY	REVISION 0	91MC204	2-2

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3.0
FIELD INVESTIGATION

W-C completed fieldwork for the Construction Area investigation between February 24, 1992 and March 4, 1992. Field activities were done under a site-specific Health and Safety Plan developed by W-C specifically for the project activities described in this section.

3.1 DRILLING AND SOIL SAMPLING

Soil borings drilled along the proposed centerline of the relocated sewer were advanced to a depth of 25 feet. Other borings were drilled to the water table. The borings were drilled using a CME Model 55 drill rig with 8-inch outside diameter (OD), 4.25-inch inside diameter (ID) hollow-stem augers (HSA). Soil samples were examined in the field and described according to the Unified Soil Classification System (USCS) by a W-C geologist. Geologic logs were completed for each boring and are provided in the Appendix.

Soil samples were collected using a stainless-steel split-spoon sampler at 2.5-foot intervals from the ground surface to the target depth. Recovered soil samples were field screened for potential volatile organic vapors. Soil samples for chemical analysis were collected from each of the borings in the sewer relocation corridor at depth intervals of 0 to 1.5 feet, 3 to 4.5 feet, 6 to 7.5 feet, the water table interface (estimated 10 to 11.5 feet), 15 to 16.5 feet, 20 to 21.5 feet, and 25 to 26.5 feet.

Recovered soil samples in the proposed building area were field screened for potential volatile organic vapors. Soil samples for chemical analysis were collected at depth intervals of 0 to 1.5 foot, 3 to 4.5 feet, 6 to 7.5 feet, and at the water table interface (estimated 10 to 11.5 feet).

3.1.1 Field Screening

Recovered soil samples from each boring were field screened to assess the presence or absence of organic vapors. A portion of each soil sample from each boring was placed in an 8-ounce glass container. The container was filled about one-half full with soil and the mouth

of the container was covered with aluminum foil and tightly capped. After allowing the sample to equilibrate for about 30 minutes, the headspace in the container was analyzed with an HNu photoionization detector (PID) by removing the cap and inserting the instrument probe through the foil liner. The headspace readings were recorded on the geologic logs.

3.1.2 Laboratory Analysis

Soil samples for chemical analysis were collected and placed in appropriate containers provided by National Environmental Testing (NET) Midwest, Inc. of Cedar Falls, Iowa immediately after sampling. The sample containers were labeled and stored in a chilled ice chest until delivery to NET. The samples were shipped via overnight courier to the laboratory. Chain-of-Custody forms were maintained between W-C and NET personnel to document the custody and delivery of samples. Laboratory analytical reports are not included in this report; however, they are maintained by UPRR in the project record file.

Soil samples from the proposed sewer relocation corridor were analyzed for the following parameters:

Surface Sample (0 to 1.5 foot): Total metals, SVOCs, pesticides/PCBs, and asbestos. If the soil boring was located in a paved area, the sample was collected from the first foot underlying the pavement.

Intermediate Sample (3 to 4.5 feet): Total metals (archived for possible analysis depending on analytical results from other samples)

Intermediate Sample (6 to 7.5 feet): Total metals, VOCs, SVOCs, and pesticides/PCBs

Groundwater Interface Sample (10 to 11.5 feet): Total metals, VOCs, SVOCs, and TRPH

Intermediate Samples (15 to 16.5 feet, 20 to 21.5 feet, 25 to 26.5 feet): Total metals (archived from each of the three sampling intervals for possible analysis depending on analytical results from other sampling locations) and VOCs, SVOCs, and TRPH from the sampling interval exhibiting the highest field-screened volatile organics level and VOCs, SVOCs, and TRPH from the sampling interval below. If no volatile organic vapors were detected by field screening, VOCs, SVOCs, and TRPH samples were submitted only from the 15 to 16.5 feet sampling interval.

Soil samples from the proposed building area were analyzed for the following parameters:

Surface Sample (0 to 1.5 feet): Total metals, SVOCs, pesticides/PCBs, and asbestos. If the soil boring was located in a paved area, the sample was collected from the first foot underlying the pavement.

Intermediate Sample (3 to 4.5 feet): Total metals (archived for possible analysis depending on analytical results from other samples)

Intermediate Sample (6 to 7.5 feet): Total metals, VOCs, SVOCs, and pesticides/PCBs

Groundwater Interface Sample (10 to 11.5 feet): Total metals, VOCs, SVOCs, and TRPH

The soil sample analytical results are discussed in Section 4.0 of this report.

3.2 DECONTAMINATION

Drilling equipment was decontaminated upon arrival at the site and between each boring using a hot-water, high-pressure cleaner. Sampling equipment was decontaminated between each sample using a detergent-potable water wash, potable water rinse, and distilled water rinse. The water generated by decontamination was field screened with an HNu PID for the presence of organic vapors. The results of decontamination water field screening were nondetect and the water was discharged on the ground and allowed to infiltrate or evaporate.

3.3 HEALTH AND SAFETY

Prior to the start of fieldwork, the Site Health and Safety Plan was reviewed by field personnel, and a site briefing was held. Following the briefing, field personnel signed a compliance agreement to the Site Health and Safety Plan.

Air in the breathing zone was monitored frequently during fieldwork using an HNu PID. No HNu levels above background were measured in the breathing zone during any of the fieldwork.

4.0
NATURE AND EXTENT OF CONTAMINATION

4.1 DISCUSSION OF ANALYTICAL RESULTS

The sampling and analyses, summarized in Table 4-1, included surface and subsurface soil samples from 19 soil boring locations. Soil sampling locations are shown on Figure 4-1. The analytical results for the soil samples are summarized in Table 4-2.

No VOCs were found in the soil samples collected at the Construction Area with the exception of toluene, tetrachloroethene (PCE), and methylene chloride. The concentration of both toluene (UPCA-SB14-0801) and PCE (UPCA-SB02-1101) were estimated values (flagged "J") of 2J μg/kg. The reported methylene chloride concentrations (2J μg/kg to 15 μg/kg) are likely due to laboratory contamination.

The primary semi-VOCs found in soil samples are classified as polycyclic aromatic hydrocarbons (PAHs). The samples with the greatest concentrations of PAHs were from borings UPCA-SB09, UPCA-SB10, and UPCA-SB15. Other semi-VOCs reported were di-n-butylphthalate, di-n-octylphthalate, dibenzofuran, N-Nitrosodi-n-propylamine, and N-Nitrosodiphenylamine. Semi-VOCs detected and their concentration ranges are summarized in Table 4-3.

PAH concentrations ranged from 1 μg/g to 34 μg/g throughout the Construction Area. Total PAH concentrations ranged from 1.9 μg/g at boring UPCA-SB02 to 48.8 μg/g at boring UPCA-SB10.

Several pesticides and Aroclor 1260 (a PCB) were found in the Construction Area borings. Aroclor 1260 was found in samples UPCA-SB14-0001 and UPCA-SB16-0001 at concentrations of 330 μg/kg and 440J μg/kg, respectively. The most prevalent pesticide found was methoxychlor in ten samples ranging in concentration from 3.6J μg/kg to 15 μg/kg. Chlordane was detected in eight samples at concentrations ranging from 11JP μg/kg to 550 μg/kg. Chlorinated phenylic insecticides, DDT, DDE, and DDD were found in five samples, seven samples, and five samples, respectively. Concentrations of DDT ranged from

0.54JP µg/kg to 12P µg/kg, DDE ranged from 0.65JP µg/kg to 28 µg/kg, and DDD ranged from 1.5J µg/kg to 18P µg/kg.

Heptachlor epoxide was found in four samples ranging in concentration from 1.0JP µg/kg to 17 µg/kg. Endosulfan sulfate concentrations ranged from 1.2JP µg/kg to 4.6JP µg/kg in two samples. Delta BHC and endrin aldehyde were each detected in two samples at concentrations of 1.2JP µg/kg to 1.4JP µg/kg, and 3.6JP µg/kg to 4.4J µg/kg, respectively. Heptachlor, endrin, dieldrin, and aldrin were each detected in one sample at concentrations of 8.8P µg/kg, 0.65J µg/kg, 3.6JP µg/kg, and 9.50 µg/kg, respectively. Pesticides/PCBs detected and their concentration ranges are summarized in Table 4-3.

Eleven TPH detections were reported from five soil boring locations. The TPH concentrations ranged from 11 µg/g to 3,840 µg/g with the greatest TPH concentration being associated with sample number UPCA-SB01-0801.

Several metals were detected in the soil samples collected from the Construction Area. The metals detected and their concentration ranges are summarized below:

Aluminum	870-21,000 mg/kg
Antimony	39-59 mg/kg
Arsenic	2.7J-300 mg/kg
Barium	21-800 mg/kg
Beryllium	0.56-2.4 mg/kg
Cadmium	1.3-19 mg/kg
Calcium	1,500-170,000 mg/kg
Chromium	3.1-59 mg/kg
Cobalt	2.7-37 mg/kg
Copper	3.4-400 mg/kg
Iron	4,800-71,000 mg/kg
Lead	7.3-1,600 mg/kg
Magnesium	270-16,000 mg/kg
Manganese	77-800 mg/kg
Mercury	2.2 mg/kg
Nickel	2.9-89 mg/kg

Potassium	240-4,400 mg/kg
Selenium	0.6-5.6 mg/kg
Silver	1.2-6.7 mg/kg
Sodium	37-710 mg/kg
Vanadium	10-54 mg/kg
Zinc	20-1,600 mg/kg

4.2 DATA QUALITY

This section summarizes the results of the data quality review of the laboratory data generated for the Construction Area investigation. One hundred fifty soil samples were collected and submitted to NET Midwest for analysis. NET Cambridge was additionally utilized as a subcontracted laboratory to NET Midwest. The review was performed to assess whether the data are suitable for their intended use using applicable sections from the U.S. EPA guidance documents "National Functional Guidelines for Organic Data Review", June 1991 and "Laboratory Data Validation Functional Guidelines for Inorganic Analyses", June 1988.

Acceptance criteria were set forth in the NET QAPP for the Union Pacific Omaha Shops Project (January, 1992). Criteria examined during this review included:

- Holding times
- Matrix spike/Matrix spike duplicates (MS/MSD)
- Trip blank samples
- Field duplicate samples
- Laboratory QA/QC data including blanks and duplicates (where provided by laboratory)
- Quantitation limits

4.2.1 Holding Times

Holding times were defined as the maximum allowable time between sample collection and analysis and/or extraction, based on the analyte of interest, stability factors, and preservation methods. Allowable holding times were presented in the Work Plan (W-C 1992).

All samples were prepared (extracted) and analyzed within the appropriate holding times for all parameters including VOCs, semi-VOCs, pesticides and PCBs, TPH, and total metals.

No qualification of the data was necessary based on holding times.

4.2.2 Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were soil samples to which known concentrations of method-specific analytes were added by the laboratory. The MS/MSDs were collected through out the entire analytical procedure to assess matrix interference and long-term accuracy and precision of the analytical method on various matrices.

The measured recoveries of the spiked analytes in the MS and MSD samples were calculated and reported as percent recovery (%R). The relative percent difference (RPD) between the MS and the MSD was also determined.

Due to either poor laboratory performance or suspected matrix interference (as demonstrated by low percent recovery) and/or sample nonhomogeneity (as demonstrated by high RPD), the following samples were qualified as estimated "J".

Sample No.	Analyte	Reason
MS18-0801 (Comp)	Mercury and selenium results	Suspected low bias
MS18-0001 (Comp)	Copper and lead results	Suspected low bias
MS18-0001 (Comp)	Manganese result	Suspected high bias
SB09-0801 (Comp)	All SVOC results	Subject to sample variability
SB06-1101 (Comp)	Manganese results	Suspected low bias
SB01-0801 (Comp)	Arsenic and selenium results	Suspected low bias
SB10-1101 (Comp)	Mercury and selenium results	Suspected low bias
SB19-1101 (Comp)	Arsenic and Selenium results	Suspected low bias and subject to sample variability

Although manganese MS %R was exceptionally low for sample MS02-1601 (COMP), no qualification action was taken as the spike level was negligible in comparison to sample concentration. Two samples MS18-0801(GRAB) and MS01-0801(COMP)) for which MS/MSD analyses were requested on the Chain-of-Custody were not reported by the laboratory.

4.2.3 Trip Blank Samples

Two trip blank samples were analyzed for VOCs to check for procedural contamination, cross contamination, and laboratory contamination during shipment and storage of samples. Trip blank results were all nondetect; therefore, the associated data are usable as reported on the basis of the trip blanks.

4.2.4 Field Duplicate Samples

Field duplicate samples were analyzed to check for sampling and laboratory reproducibility. All field duplicate results were within acceptable criteria with the exception of two semi-VOC analytes for samples SB01-0001 (COMP) and FR01-0001 (COMP). Due to poor precision, N-nitrosodiphenylamine and N-nitrosodi-n-propylamine associated with the aforementioned samples were qualified as estimated and flagged "J".

4.2.5 Laboratory Control Samples

Laboratory control samples (LCS) were defined as QC samples originated and prepared by the analytical laboratory. These samples were used to assess method accuracy.

Some LCS data provided did not meet acceptable criteria. Due to low arsenic LCS recovery associated with SDG 92.1649, all arsenic nondetects were qualified as estimated "J" based on suspicion of low bias. Pesticide/PCB LCS results for SDG 92.1439 have recoveries of 15 percent and 143 percent for 4,4-DDD and 4,4-DDT, respectively. All associated samples were considered to be estimates and flagged "J" for analytes 4,4-DDD and 4,4-DDT, and are subject to low bias and high bias, respectively.

4.2.6 Method Blanks

For this project, a method blank was defined as a sample matrix that was as free of analytes as practical and contained the same reagents as used in the processing and analysis of the field samples. The blank was used to assess sample contamination as a result of laboratory operations in the preparation and analysis of the sample. Analytes found in method blanks were generally attributed to laboratory contamination or laboratory artifacts.

Analytes reported in samples at concentrations below five times (5x) the blank concentration [ten times (10x) for common laboratory contaminants as specified in the EPA Functional Guidelines] were considered to be laboratory artifacts. These analytes were qualified as nondetects (U) in the quantitation of the associated field sample analyses. Contaminants which were below the 10x or 5x blank concentration, but above the nominal quantitation or reporting limits, were also considered to be laboratory artifacts, and were qualified as "U" at the reported concentration. Common laboratory contaminants which were reported at levels greater than 10x the blank concentration and above the nominal quantitation or reporting limits were considered to be present in the sample, and no qualification was required.

All method blank results were nondetect with the exception of metals. Low levels of zinc, sodium, iron, calcium, tin, aluminum, and copper were detected in the blanks ranging from 0.0051 mg/L to 0.11 mg/L; however, these levels were negligible when compared to the levels detected in the associated samples. No data were qualified on the basis of method blanks.

4.2.7 Surrogate Compound Recoveries

Surrogate compounds were defined as compounds added to every blank, sample, and laboratory QA/QC sample when specified in the respective analytical method. These results were used to evaluate the accuracy of the analytical measurements on a sample-specific basis. Control limits for surrogate compound recoveries were presented in the QAPP.

One semi-VOC surrogate result for sample SB03-0801 (COMP) was less than 10 percent; however, based on professional judgment, no action was taken. Semi-VOC surrogate recoveries associated with sample SB03-1601 (COMP) were low, but due to elevated

reporting limits, no qualification was judged necessary. For SDG 92.1649, no semi-VOC surrogate results were available due to a laboratory error. Due to high surrogate recovery for volatile sample SB06-0801 (GRAB), all positive results associated with this sample were considered estimated and flagged "J". Pesticide/PCB surrogate results associated with samples SB15-0801 (COMP), SB08-0301 (COMP), SB16-0001 (COMP), and SB16-0001 (COMP) were subject to high bias; therefore, the Aroclor 1260 result associated with sample SB16-0001 (COMP) was considered estimated and flagged "J", subject to high bias. No other action was taken because all other results were nondetect.

4.2.8 Quantitation Limits

Nominal values for quantitation limits were obtained for all analyses.

4.2.9 Summary

This review indicated that the overall data quality was good. The data are usable for their intended purpose, as qualified where appropriate.

TABLE 4-1
CONSTRUCTION AREA SOIL SAMPLING SUMMARY
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

Drilling/Sampling Location	Sample Identification	Sample Depth (ft)	Sample Date	Parameters						
				VOCs[1]	Semi-VOCs[2]	Pest/PCBs[3]	TPH[4]	Total Metals	Asbestos	Comments
SB01	UPCA-SB01-0001	1-2	3-3-92		X	X		X	X	
	UPCA-FR01-0001	1-2	3-3-92		X					Duplicate
	UPCA-SB01-0301	3	3-4-92					X		Archived
	UPCA-SB01-0601	4-6	3-4-92				X			
	UPCA-SB01-0801	6-8	3-4-92	X	X	X	X	X		
	UPCA-MS01-0801	6-8	3-4-92					X		MS
	UPCA-FR01-0801	6-8	3-4-92	X						Duplicate
	UPCA-SB01-1101	9-11	3-4-92	X	X		X	X		
	UPCA-FR01-1101	9-11	3-4-92				X			Duplicate
	UPCA-SB01-1601	14-16	3-4-92	X	X		X	X		
	UPCA-FR01-1601	14-16	3-4-92					X		Duplicate
	UPCA-SB01-2101	19-21	3-4-92					X		Archived
	UPCA-SB01-2501	24-24.5	3-4-92					X		Archived
SB02	UPCA-SB02-0001	1-2	3-3-92		X	X		X	X	
	UPCA-SB02-0501	3-5	3-3-92				X	X		Metals Archived
	UPCA-SB02-0901	7-9	3-3-92	X	X		X	X		
	UPCA-SB02-1101	9-11	3-3-92	X	X		X	X		
	UPCA-MS02-1101	9-11	3-3-92	X						MS
	UPCA-MX02-1101	9-11	3-3-92	X						MSD
	UPCA-SB02-1601	14-16	3-3-92	X	X		X	X		

TABLE 4-1
CONSTRUCTION AREA SOIL SAMPLING SUMMARY
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

Drilling/Sampling Location	Sample Identification	Sample Depth (ft)	Sample Date	Parameters						
				VOCs[1]	Semi-VOCs[2]	Pest/PCBs[3]	TPH[4]	Total Metals	Asbestos	Comments
SB02	UPCA-MS02-1601	14-16	3-3-92					X		MS
	UPCA-SB02-2101	19-21	3-3-92					X		Archived
	UPCA-SB02-2301	22-22.5	3-3-92					X		Archived
SB03	UPCA-SB03-0001	1-2	3-3-92		X	X		X	X	
	UPCA-FR03-0001	1-2	3-3-92					X		Duplicate
	UPCA-SB03-0501	3-5	3-3-92					X		Archived
	UPCA-SB03-0801	6-8	3-3-92	X	X	X		X		
	UPCA-FR03-0001	6-8	3-3-92			X				Duplicate
	UPCA-SB03-1101	9-11	3-3-92	X	X		X	X		
	UPCA-SB03-1601	14-16	3-3-92	X	X		X	X		Metals Archived
	UPCA-SB03-2101	19-21	3-3-92					X		Archived
SB04	UPCA-SB04-0001	0-1	2-27-92		X	X		X	X	
	UPCA-SB04-0001	0-1	2-27-92		X	X				MS/MSD
	UPCA-SB04-0501	3-5	2-27-92					X		Archived
	UPCA-SB04-0801	6-8	2-27-92	X	X	X		X		
	UPCA-SB04-1101	9-11	2-27-92	X	X	X		X		
	UPCA-SB04-1601	14-16	2-27-92	X	X		X	X		Metals Archived

TABLE 4-1
CONSTRUCTION AREA SOIL SAMPLING SUMMARY
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

Drilling/Sampling Location	Sample Identification	Sample Depth (ft)	Sample Date	Parameters						
				VOCs[1]	Semi-VOCs[2]	Pest/PCBs[3]	TPH[4]	Total Metals	Asbestos	Comments
SB04	UPCA-SB04-2101	19-21	2-27-92					X		Archived
	UPCA-SB04-2601	24-26	2-27-92					X		Archived
SB05	UPCA-SB05-0001	0-1	2-27-92		X	X		X	X	
	UPCA-SB05-0501	3-5	2-27-92					X		Archived
	UPCA-SB05-0801	6-8	2-27-92	X	X	X		X		
	UPCA-SB05-1101	9-11	2-27-92	X	X		X	X		
	UPCA-SB05-1601	14-16	2-27-92	X	X		X	X		Metals Archived
	UPCA-SB05-2101	19-21	2-27-92					X		Archived
	UPCA-SB05-2601	24-26	2-27-92					X		Archived
SB06	UPCA-SB06-0001	0-1	3-2-92		X	X		X	X	
	UPCA-FR06-0001	0-1	3-2-92						X	Duplicate
	UPCA-SB06-0501	3-5	3-2-92				X	X		Metals Archived
	UPCA-SB06-0801	6-8	3-2-92	X	X		X	X		
	UPCA-MS06-0801	6-8	3-2-92		X					MS
	UPCA-MX06-0801	6-8	3-2-92		X					MSD
	UPCA-SB06-1101	9-11	3-2-92	X	X		X	X		
	UPCA-FR06-1101	9-11	3-2-92					X		Duplicate
	UPCA-MS06-1101	9-11	3-2-92					X		MS

TABLE 4-1
CONSTRUCTION AREA SOIL SAMPLING SUMMARY
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

Drilling/Sampling Location	Sample Identification	Sample Depth (ft)	Sample Date	Parameters						
				VOCs[1]	Semi-VOCs[2]	Pest/PCBs[3]	TPH[4]	Total Metals	Asbestos	Comments
SB07	UPCA-SB07-0001	1-3	3-2-92		X	X		X	X	
	UPCA-FR07-0001	1-3	3-2-92			X				
	UPCA-SB07-0501	3-5	3-2-92					X		Archived
	UPCA-SB07-0801	6-8	3-2-92	X	X	X		X		
	UPCA-MS07-0801	6-8	3-2-92	X						MS
	UPCA-MX07-0801	6-8	3-2-92	X						MSD
	UPCA-SB07-1101	9-11	3-2-92	X	X		X	X		
	UPCA-FR07-1101	9-11	3-2-91	X						Duplicate
SB08	UPCA-SB08-0301	1-3	2-26-92		X	X		X	X	
	UPCA-SB08-0501	3-5	2-26-92					X		Archived
	UPCA-SB08-0801	6-8	2-26-92	X	X	X		X		
	UPCA-SB08-1101	9-11	2-26-92	X	X		X	X		
SB09	UPCA-SB09-0001	1-2	3-2-92		X	X		X	X	
	UPCA-SB09-0501	3-5	3-2-92					X		Archived
	UPCA-SB09-0801	6-8	3-2-92	X	X	X		X		
	UPCA-MS09-0801	6-8	3-2-92		X					MS
	UPCA-MX09-0801	6-8	3-2-92		X					MSD

TABLE 4-1
CONSTRUCTION AREA SOIL SAMPLING SUMMARY
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

Drilling/Sampling Location	Sample Identification	Sample Depth (ft)	Sample Date	Parameters						
				VOCs[1]	Semi-VOCs[2]	Pest/PCBs[3]	TPH[4]	Total Metals	Asbestos	Comments
SB09	UPCA-SB09-1101	9-11	3-2-92		X		X	X		
	UPCA-FR09-1101	9-11	3-2-92		X		X			
SB10	UPCA-SB10-0301	2-3	2-26-92		X	X		X	X	
	UPCA-SB10-0601	4-6	2-26-92				X	X		Metals Archived
	UPCA-SB10-0901	7-9	2-26-92	X	X	X		X		
	UPCA-SB10-1101	9-11	2-26-92	X	X		X	X		
SB11	UPCA-SB11-0001	0-1	2-28-92		X	X		X	X	
	UPCA-SB11-0501	3-5	2-28-92					X		Archived
	UPCA-SB11-0801	6-8	2-28-92	X	X	X		X		
	UPCA-SB11-1101	9-11	2-28-92	X	X		X	X		
SB12	UPCA-SB12-0301	1-3	2-26-92		X	X		X	X	
	UPCA-SB12-0501	3-5	2-26-92					X		Archived
	UPCA-SB12-0801	6-8	2-26-92	X	X	X		X		
	UPCA-SB12-1101	9-11	2-26-92	X	X		X	X		
SB13	UPCA-SB13-0001	0-1	3-2-92		X	X		X	X	
	UPCA-SB13-0501	3-5	3-2-92					X		Archived

TABLE 4-1
CONSTRUCTION AREA SOIL SAMPLING SUMMARY
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

Drilling/Sampling Location	Sample Identification	Sample Depth (ft)	Sample Date	Parameters						
				VOCs[1]	Semi-VOCs[2]	Pest/PCBs[3]	TPH[4]	Total Metals	Asbestos	Comments
SB13	UPCA-SB13-0801	6-8	3-2-92	X						
	UPCA-SB13-1101	9-11	3-2-92	X	X		X	X		
	UPCA-SB13-1601	14-16	3-2-92	X	X		X	X		Metals Archived
	UPCA-SB13-2101	19-21	3-2-92					X		Archived
	UPCA-SB13-2501	24-26	3-2-92					X		Archived
SB14	UPCA-SB14-0001	0-1	2-28-92		X	X		X	X	
	UPCA-MS14-0001	0-1	2-28-92			X				MS
	UPCA-MX14-0001	0-1	2-28-92			X				MSD
	UPCA-SB14-0501	3-5	2-28-92					X		Archived
	UPCA-SB14-0801	6-8	2-28-92	X	X	X		X		
	UPCA-FR14-0801	6-8	2-28-92	X				X		Duplicate
	UPCA-SB14-1101	9-11	2-28-92	X	X		X	X		
SB15	UPCA-SB15-0001	0-2	2-26-92		X	X		X	X	
	UPCA-SB15-0501	3-5	2-26-92					X		Archived
	UPCA-SB15-0801	6-8	2-26-92	X	X	X		X		
	UPCA-SB15-1101	9-11	2-26-92	X	X		X	X		

TABLE 4-1
CONSTRUCTION AREA SOIL SAMPLING SUMMARY
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

Drilling/Sampling Location	Sample Identification	Sample Depth (ft)	Sample Date	Parameters						
				VOCs[1]	Semi-VOCs[2]	Pest/PCBs[3]	TPH[4]	Total Metals	Asbestos	Comments
SB16	UPCA-SB16-0001	0-1	2-28-92		X	X		X	X	
	UPCA-FR16-0001	0-1	2-28-92		X					Duplicate
	UPCA-SB16-0501	3-5	2-28-92					X		Archived
	UPCA-SB16-0801	6-8	2-28-92	X	X	X		X		
	UPCA-MS16-0801	6-8	2-28-92		X					MS
	UPCA-MX16-0801	6-8	2-28-92		X					MSD
	UPCA-SB16-1101	9-11	2-28-92	X	X		X	X		
SB17	UPCA-SB17-0501	2-4.5	2-25-92		X	X		X	X	
	UPCA-SB17-0801	6-8	2-25-92	X	X	X	X	X		
	UPCA-SB17-1101	9-11	2-25-92	X	X		X	X		
SB18	UPCA-SB18-0001	0-1	2-28-92		X	X		X	X	
	UPCA-MS18-0001	0-1	2-28-92					X		MS
	UPCA-SB18-0501	3-5	2-28-92					X		Archived
	UPCA-SB18-0801	6-8	2-28-92	X	X	X		X		
	UPCA-MS18-0801	6-8	2-28-92	X						MS
	UPCA-MX18-0801	6-8	2-28-92	X						MSD
	UPCA-SB18-1101	9-11	2-28-92	X	X		X	X		

TABLE 4-1
CONSTRUCTION AREA SOIL SAMPLING SUMMARY
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

Drilling/Sampling Location	Sample Identification	Sample Depth (ft)	Sample Date	Parameters						
				VOCs[1]	Semi-VOCs[2]	Pest/PCBs[3]	TPH[4]	Total Metals	Asbestos	Comments
SB19	UPCA-SB19-0001	0-1	2-25-92		X	X		X	X	
	UPCA-SB19-0501	3-4.5	2-25-92					X		Archived
	UPCA-SB19-1101	9.5-11.5	2-25-92	X	X		X	X		

1 Volatile organic compounds
2 Semivolatile organic compounds
3 Pesticides/polychlorinated biphenyls
4 Total recoverable petroleum hydrocarbons

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB01-0001	UPCA-SB01-0601	UPCA-SB01-0801	UPCA-SB01-1101	UPCA-SB01-1601
VOLATILE ORGANICS						
Methylene Chloride	µg/kg	-	-	6 U	6 U	7 U
Tetrachloroethene	µg/kg	-	-	6 U	6 U	7 U
Toluene	µg/kg	-	-	6 U	6 U	7 U
SEMIVOLATILE ORGANICS						
Acenaphthene	µg/g	15 U	-	4 U	4.5 U	2 U
Anthracene	µg/g	15 U	-	4 U	4.5 U	2 U
Benzo(a)anthracene	µg/g	15 U	-	4 U	4.5 U	2 U
Benzo(a)pyrene	µg/g	15 U	-	4 U	4.5 U	2 U
Benzo(b)fluoranthene	µg/g	15 U	-	4 U	4.5 U	2 U
Benzo(ghi)perylene	µg/g	15 U	-	4 U	4.5 U	2 U
Benzo(k)fluoranthene	µg/g	15 U	-	4 U	4.5 U	2 U
Chrysene	µg/g	15 U	-	4 U	4.5 U	2 U
Di-n-butylphthalate	µg/g	15 U	-	4 U	4.5 U	2 U
Di-n-octylphthalate	µg/g	15 U	-	4 U	4.5 U	2 U
Fluoranthene	µg/g	15 U	-	4 U	4.5 U	2 U
Fluorene	µg/g	15 U	-	4 U	4.5 U	2 U
N-Nitrosodiphenylamine	µg/g	23 J	-	4 U	4.5 U	2 U
N-Nitrosodi-n-propylamine	µg/g	38 J	-	4 U	4.5 U	2 U
Phenanthrene	µg/g	34	-	4 U	4.5 U	2 U
Pyrene	µg/g	15 U	-	4 U	4.5 U	2 U
PESTICIDES/PCBs						
4,4'-DDD	µg/kg	6 U	-	7 U	-	-
4,4'-DDE	µg/kg	6 U	-	7 U	-	-
4,4'-DDT	µg/kg	6 U	-	7 U	-	-
Aldrin	µg/kg	6 U	-	7 U	-	-
Alpha-BHC	µg/kg	6 U	-	7 U	-	-
Chlordane	µg/kg	6 U	-	7 U	-	-
Delta-BHC	µg/kg	6 U	-	7 U	-	-
Endosulfan sulfate	µg/kg	6 U	-	7 U	-	-
Endrin Aldehyde	µg/kg	6 U	-	7 U	-	-
Heptachlor	µg/kg	6 U	-	7 U	-	-
Heptachlor epoxide	µg/kg	6 U	-	7 U	-	-
Methoxychlor	µg/kg	6 U	-	7 U	-	-
PETROLEUM HYDROCARBONS						
TPH	µg/g	-	1540	3840	1600	281

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB01-0001	UPCA-SB01-0601	UPCA-SB01-0801	UPCA-SB01-1101	UPCA-SB01-1601
METALS						
Aluminum (Al)	mg/kg	7400	-	9700	12000	18000
Antimony (Sb)	mg/kg	24 U	-	28 U	28 U	29 U
Arsenic (As)	mg/kg	16	-	6.8	4.5	12
Barium (Ba)	mg/kg	160	-	180	270	250
Beryllium (Be)	mg/kg	0.59	-	0.57	0.64	0.78
Cadmium (Cd)	mg/kg	1 U	-	1 U	1.4 U	2 U
Calcium (Ca)	mg/kg	3900	-	7200	22000	18000
Chromium (Cr)	mg/kg	17	-	15	17	22
Cobalt (Co)	mg/kg	9.5	-	11	11	12
Copper (Cu)	mg/kg	220	-	23	22	24
Iron (Fe)	mg/kg	40000	-	16000	22000	23000
Lead (Pb)	mg/kg	320	-	50	17	16
Magnesium (Mg)	mg/kg	1800	-	4500	8200	8100
Manganese (Mn)	mg/kg	190	-	290	1100	540
Mercury (Hg)	mg/kg	2 U	-	2 U	2 U	2 U
Nickel (Ni)	mg/kg	20	-	21	20	24
Potassium (K)	mg/kg	1200	-	1700	1500	2300
Selenium (Se)	mg/kg	0.6	-	1 U	0.5 U	1 U
Silver (Ag)	mg/kg	1 U	-	1 U	1.4 U	2 U
Sodium (Na)	mg/kg	920	-	1300	1200	880
Thallium (Tl)	mg/kg	10 U	-	10 U	10 U	10 U
Vanadium (V)	mg/kg	22	-	26	33	42
Zinc (Zn)	mg/kg	220	-	62	73	79
ASBESTOS						
Chrysotile	%	1 U	-	-	-	-

B = Analyte in blank
U = Nondetected
J = Estimated value
BQ = Value may not be site-related
P = Greater than 25% difference between Quant and Confirm GC analysis, lower of two values is reported following EPA guidelines
- = Not analyzed

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB02-0001	UPCA-SB02-0501	UPCA-SB02-0901	UPCA-SB02-1101	UPCA-SB02-1601
VOLATILE ORGANICS						
Methylene Chloride	µg/kg	-	-	6 U	2 J	7 U
Tetrachloroethene	µg/kg	-	-	6 U	2 J	7 U
Toluene	µg/kg	-	-	6 U	7 U	7 U
SEMIVOLATILE ORGANICS						
Acenaphthene	µg/g	1 U	-	1 U	1 U	2.5 U
Anthracene	µg/g	1 U	-	1 U	1 U	2.5 U
Benzo(a)anthracene	µg/g	1 U	-	1 U	1 U	2.5 U
Benzo(a)pyrene	µg/g	1 U	-	1 U	1 U	2.5 U
Benzo(b)fluoranthene	µg/g	1 U	-	1 U	1 U	2.5 U
Benzo(ghi)perylene	µg/g	1 U	-	1 U	1 U	2.5 U
Benzo(k)fluoranthene	µg/g	1 U	-	1 U	1 U	2.5 U
Chrysene	µg/g	1 U	-	1 U	1 U	2.5 U
Di-n-butylphthalate	µg/g	4.1	-	1 U	1 U	2.6
Di-n-octylphthalate	µg/g	1 U	-	1 U	1 U	2.5 U
Fluoranthene	µg/g	1.9	-	1 U	1 U	2.5 U
Fluorene	µg/g	1 U	-	1 U	1 U	2.5 U
N-Nitrosodiphenylamine	µg/g	1 U	-	1 U	1 U	2.5 U
N-Nitrosodi-n-propylamine	µg/g	1 U	-	1 U	1 U	2.5 U
Phenanthrene	µg/g	1 U	-	1 U	1 U	2.5 U
Pyrene	µg/g	1 U	-	1 U	1 U	2.5 U
PESTICIDES/PCBs						
4,4'-DDD	µg/kg	5 U	-	40 U	-	-
4,4'-DDE	µg/kg	0.65 JP	-	40 U	-	-
4,4'-DDT	µg/kg	5 U	-	40 U	-	-
Aldrin	µg/kg	5 U	-	40 U	-	-
Alpha-BHC	µg/kg	5 U	-	40 U	-	-
Chlordane	µg/kg	50 U	-	400 U	-	-
Delta-BHC	µg/kg	5 U	-	40 U	-	-
Endosulfan sulfate	µg/kg	5 U	-	40 U	-	-
Endrin Aldehyde	µg/kg	5 U	-	40 U	-	-
Heptachlor	µg/kg	5 U	-	40 U	-	-
Heptachlor epoxide	µg/kg	5 U	-	40 U	-	-
Methoxychlor	µg/kg	11	-	40 U	-	-
PETROLEUM HYDROCARBONS						
TPH	µg/g	10 U	163	17	10 U	10 U

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB02-0001	UPCA-SB02-0501	UPCA-SB02-0901	UPCA-SB02-1101	UPCA-SB02-1601
METALS						
Aluminum (Al)	mg/kg	7200	-	14000	20000	21000
Antimony (Sb)	mg/kg	23 U	-	29 U	29 U	30 U
Arsenic (As)	mg/kg	7.3	-	4.4	3.5	9.7
Barium (Ba)	mg/kg	150	-	230	250	250
Beryllium (Be)	mg/kg	0.66	-	0.72	0.79	0.92
Cadmium (Cd)	mg/kg	1.1 U	-	1.5 U	1.5 U	13
Calcium (Ca)	mg/kg	8500	-	16000	20000	18000
Chromium (Cr)	mg/kg	11	-	20	25	29
Cobalt (Co)	mg/kg	7.8	-	13	12	18
Copper (Cu)	mg/kg	270	-	28	24	28
Iron (Fe)	mg/kg	27000	-	23000	24000	36000
Lead (Pb)	mg/kg	320	-	18	21	21
Magnesium (Mg)	mg/kg	1400	-	7400	7000	7900
Manganese (Mn)	mg/kg	240	-	570	690	740
Mercury (Hg)	mg/kg	2 U	-	2 U	2 U	2 U
Nickel (Ni)	mg/kg	17	-	25	24	36
Potassium (K)	mg/kg	560	-	1900	2700	4400
Selenium (Se)	mg/kg	0.5 U	-	0.5 U	0.5 U	0.5 U
Silver (Ag)	mg/kg	1.1 U	-	1.5 U	1.5 U	3.8
Sodium (Na)	mg/kg	710	-	550	580	250
Thallium (Tl)	mg/kg	10 U	-	10 U	10 U	10 U
Vanadium (V)	mg/kg	15	-	36	47	50
Zinc (Zn)	mg/kg	170	-	87	87	90
ASBESTOS						
Chrysotile	%	2	-	-	-	-

B = Analyte in blank
U = Nondetected
J = Estimated value
BQ = Value may not be site-related
P = Greater than 25% difference between Quant and Confirm GC analysis, lower of two values is reported following EPA guidelines
- = Not analyzed

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB03-0001	UPCA-SB03-0801	UPCA-SB03-1101	UPCA-SB03-1101
VOLATILE ORGANICS					
Methylene Chloride	µg/kg	-	6 U	3 J	3 J
Tetrachloroethene	µg/kg	-	6 U	7 U	7 U
Toluene	µg/kg	-	6 U	7 U	7 U
SEMIVOLATILE ORGANICS					
Acenaphthene	µg/g	2 U	2.3 U	1 U	9.8 U
Anthracene	µg/g	2 U	2.3 U	1 U	9.8 U
Benzo(a)anthracene	µg/g	2 U	2.3 U	1 U	9.8 U
Benzo(a)pyrene	µg/g	2 U	2.3 U	1 U	9.8 U
Benzo(b)fluoranthene	µg/g	2 U	2.3 U	1 U	9.8 U
Benzo(ghi)perylene	µg/g	2 U	2.3 U	1 U	9.8 U
Benzo(k)fluoranthene	µg/g	2 U	2.3 U	1 U	9.8 U
Chrysene	µg/g	2 U	2.3 U	1 U	9.8 U
Di-n-butylphthalate	µg/g	2 U	3.4	1 U	17
Di-n-octylphthalate	µg/g	2 U	2.3 U	1 U	9.8 U
Fluoranthene	µg/g	2.1	2.3 U	1 U	9.8 U
Fluorene	µg/g	2 U	2.3 U	1 U	9.8 U
N-Nitrosodiphenylamine	µg/g	2 U	2.3 U	1 U	9.8 U
N-Nitrosodi-n-propylamine	µg/g	2 U	2.3 U	1 U	9.8 U
Phenanthrene	µg/g	2.1	2.3 U	1 U	9.8 U
Pyrene	µg/g	2 U	2.3 U	1 U	9.8 U
PESTICIDES/PCBs					
4,4'-DDD	µg/kg	7.8 P	6.2	7 U	-
4,4'-DDE	µg/kg	23 P	17	7 U	-
4,4'-DDT	µg/kg	8.3 P	2.9 JP	7 U	-
Aldrin	µg/kg	6 U	6 U	7 U	-
Alpha-BHC	µg/kg	2.8	6 U	7 U	-
Chlordane	µg/kg	42	11 JP	70 U	-
Delta-BHC	µg/kg	1.2 JP	1.4 JP	7 U	-
Endosulfan sulfate	µg/kg	4.6 JP	1.2 JP	7 U	-
Endrin Aldehyde	µg/kg	4.4 JP	6 U	7 U	-
Heptachlor	µg/kg	6 U	6 U	7 U	-
Heptachlor epoxide	µg/kg	1.0 JP	6.8	7 U	-
Methoxychlor	µg/kg	6 U	9	7 U	-
PETROLEUM HYDROCARBONS					
TPH	µg/g	10 U	10 U	-	-

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB03-0001	UPCA-SB03-0801	UPCA-SB03-1101	UPCA-SB03-1101
METALS					
Aluminum (Al)	mg/kg	5100	8500	18000	-
Antimony (Sb)	mg/kg	25 U	26 U	28 U	-
Arsenic (As)	mg/kg	48	5.2	2.9	-
Barium (Ba)	mg/kg	580	750	260	-
Beryllium (Be)	mg/kg	1.0	1.8	0.78	-
Cadmium (Cd)	mg/kg	1.3 U	1.3 U	1.4 U	-
Calcium (Ca)	mg/kg	41000	55000	21000	-
Chromium (Cr)	mg/kg	56	59	24	-
Cobalt (Co)	mg/kg	14	17	12	-
Copper (Cu)	mg/kg	330	340	26	-
Iron (Fe)	mg/kg	56000	71000	23000	-
Lead (Pb)	mg/kg	1600	39	19	-
Magnesium (Mg)	mg/kg	5200	5900	8200	-
Manganese (Mn)	mg/kg	430	520	800	-
Mercury (Hg)	mg/kg	2 U	2 U	2 U	-
Nickel (Ni)	mg/kg	67	57	26	-
Potassium (K)	mg/kg	260	380	2400	-
Selenium (Se)	mg/kg	0.5 U	0.5 U	0.5 U	-
Silver (Ag)	mg/kg	1.7	1.3 U	1.4 U	-
Sodium (Na)	mg/kg	260	490	340	-
Thallium (Tl)	mg/kg	10 U	10 U	10 U	-
Vanadium (V)	mg/kg	20	31	44	-
Zinc (Zn)	mg/kg	720	890	83	-
ASBESTOS					
Chrysotile	%	2	-	-	-

B = Analyte in blank
U = Nondetected
J = Estimated value
BQ = Value may not be site-related
P = Greater than 25% difference between Quant and Confirm GC analysis, lower of two values is reported following EPA guidelines
- = Not analyzed

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB04-0001	UPCA-SB04-0801	UPCA-SB04-1101	UPCA-SB04-1601
VOLATILE ORGANICS					
Methylene Chloride	µg/kg	-	6 U	7 U	8 U
Tetrachloroethene	µg/kg	-	6 U	7 U	8 U
Toluene	µg/kg	-	6 U	7 U	8 U
SEMIVOLATILE ORGANICS					
Acenaphthene	µg/g	2.1 U	1 U	1 U	1 U
Anthracene	µg/g	2.1 U	1 U	1 U	1 U
Benzo(a)anthracene	µg/g	2.1 U	1 U	1 U	1 U
Benzo(a)pyrene	µg/g	2.1 U	1 U	1 U	1 U
Benzo(b)fluoranthene	µg/g	2.1 U	1 U	1 U	1 U
Benzo(ghi)perylene	µg/g	2.1 U	1 U	1 U	1 U
Benzo(k)fluoranthene	µg/g	2.1 U	1 U	1 U	1 U
Chrysene	µg/g	2.1 U	1 U	1 U	1 U
Di-n-butylphthalate	µg/g	2.1 U	1 U	1 U	1 U
Di-n-octylphthalate	µg/g	2.1 U	1 U	1.1	1 U
Fluoranthene	µg/g	2.1 U	1 U	1 U	1 U
Fluorene	µg/g	2.1 U	1 U	1 U	1 U
N-Nitrosodiphenylamine	µg/g	2.1 U	1 U	1 U	1 U
N-Nitrosodi-n-propylamine	µg/g	2.1 U	1 U	1 U	1 U
Phenanthrene	µg/g	2.1 U	1 U	1 U	1 U
Pyrene	µg/g	2.1 U	1 U	1 U	1 U
PESTICIDES/PCBs					
4,4'-DDD	µg/kg	6 U	7 U	-	-
4,4'-DDE	µg/kg	6 U	7 U	-	-
4,4'-DDT	µg/kg	6 U	7 U	-	-
Aldrin	µg/kg	9.50	7 U	-	-
Alpha-BHC	µg/kg	6 U	7 U	-	-
Chlordane	µg/kg	60 U	70 U	-	-
Delta-BHC	µg/kg	6 U	7 U	-	-
Endosulfan sulfate	µg/kg	6 U	7 U	-	-
Endrin Aldehyde	µg/kg	6 U	7 U	-	-
Heptachlor	µg/kg	6 U	7 U	-	-
Heptachlor epoxide	µg/kg	8	7 U	-	-
Methoxychlor	µg/kg	15	7 U	-	-
PETROLEUM HYDROCARBONS					
TPH	µg/g	-	-	10 U	11

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB04-0001	UPCA-SB04-0801	UPCA-SB04-1101	UPCA-SB04-1601
METALS					
Aluminum (Al)	mg/kg	8200	14000	5100	-
Antimony (Sb)	mg/kg	24 U	27 U	28 U	-
Arsenic (As)	mg/kg	12	34	7.8	-
Barium (Ba)	mg/kg	800	300	270	-
Beryllium (Be)	mg/kg	2.4	0.66	0.56	-
Cadmium (Cd)	mg/kg	1.2 U	1.4 U	1.3 U	-
Calcium (Ca)	mg/kg	25000	6500	9100	-
Chromium (Cr)	mg/kg	31	22	20	-
Cobalt (Co)	mg/kg	8.2	19	12	-
Copper (Cu)	mg/kg	87	32	35	-
Iron (Fe)	mg/kg	39000	20000	16000	-
Lead (Pb)	mg/kg	200	240	16	-
Magnesium (Mg)	mg/kg	2100	5900	5800	-
Manganese (Mn)	mg/kg	270	420	440	-
Mercury (Hg)	mg/kg	2 U	2 U	2 U	-
Nickel (Ni)	mg/kg	15	31	23	-
Potassium (K)	mg/kg	540	1900	1900	-
Selenium (Se)	mg/kg	0.5 U	0.6 U	0.5 U	-
Silver (Ag)	mg/kg	1.2 U	1.4 U	1.3 U	-
Sodium (Na)	mg/kg	380	300	400	-
Thallium (Tl)	mg/kg	10 U	10 U	10 U	-
Vanadium (V)	mg/kg	30	44	38	-
Zinc (Zn)	mg/kg	170	98	92	-
ASBESTOS					
Chrysotile	%	1 U	-	-	-

B = Analyte in blank
U = Nondetected
J = Estimated value
BQ = Value may not be site-related
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TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB05-0001	UPCA-SB05-0801	UPCA-SB05-1101	UPCA-SB05-1601
VOLATILE ORGANICS					
Methylene Chloride	µg/kg	-	7 U	3 J	7 U
Tetrachloroethene	µg/kg	-	7 U	7 U	7 U
Toluene	µg/kg	-	7 U	7 U	7 U
SEMIVOLATILE ORGANICS					
Acenaphthene	µg/g	1 U	1 U	1 U	1 U
Anthracene	µg/g	1 U	1 U	1 U	1 U
Benzo(a)anthracene	µg/g	1 U	1 U	1 U	1 U
Benzo(a)pyrene	µg/g	1 U	1 U	1 U	1 U
Benzo(b)fluoranthene	µg/g	1 U	1 U	1 U	1 U
Benzo(ghi)perylene	µg/g	1 U	1 U	1 U	1 U
Benzo(k)fluoranthene	µg/g	1 U	1 U	1 U	1 U
Chrysene	µg/g	1	1 U	1 U	1 U
Di-n-butylphthalate	µg/g	1 U	1 U	1 U	1 U
Di-n-octylphthalate	µg/g	1 U	1 U	1 U	1 U
Fluoranthene	µg/g	2.3	1 U	1 U	1 U
Fluorene	µg/g	1 U	1 U	1 U	1 U
N-Nitrosodiphenylamine	µg/g	1 U	1 U	1 U	1 U
N-Nitrosodi-n-propylamine	µg/g	1 U	1 U	1 U	1 U
Phenanthrene	µg/g	1.7	1 U	1 U	1 U
Pyrene	µg/g	2.1	1 U	1 U	1 U
PESTICIDES/PCBs					
4,4'-DDD	µg/kg	6 U	6 U	-	-
4,4'-DDE	µg/kg	6 U	6 U	-	-
4,4'-DDT	µg/kg	6 U	6 U	-	-
Aldrin	µg/kg	6 U	6 U	-	-
Alpha-BHC	µg/kg	6 U	6 U	-	-
Chlordane	µg/kg	60 U	60 U	-	-
Delta-BHC	µg/kg	6 U	6 U	-	-
Endosulfan sulfate	µg/kg	6 U	6 U	-	-
Endrin Aldehyde	µg/kg	6 U	6 U	-	-
Heptachlor	µg/kg	6 U	6 U	-	-
Heptachlor epoxide	µg/kg	6 U	6 U	-	-
Methoxychlor	µg/kg	12	12	-	-
PETROLEUM HYDROCARBONS					
TPH	µg/g	-	-	10 U	10 U

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB05-0001	UPCA-SB05-0801	UPCA-SB05-1101	UPCA-SB05-1601
METALS					
Aluminum (Al)	mg/kg	7500	13000	16000	-
Antimony (Sb)	mg/kg	25 U	26 U	29 U	-
Arsenic (As)	mg/kg	9.6	13	6.9	-
Barium (Ba)	mg/kg	270	260	290	-
Beryllium (Be)	mg/kg	1.7	0.61	0.72	-
Cadmium (Cd)	mg/kg	1.3 U	1.3 U	1.5 U	-
Calcium (Ca)	mg/kg	22000	11000	14000	-
Chromium (Cr)	mg/kg	9.5	19	21	-
Cobalt (Co)	mg/kg	14	11	13	-
Copper (Cu)	mg/kg	370	31	25	-
Iron (Fe)	mg/kg	21000	19000	22000	-
Lead (Pb)	mg/kg	170	140	32	-
Magnesium (Mg)	mg/kg	2100	6300	7500	-
Manganese (Mn)	mg/kg	340	770	640	-
Mercury (Hg)	mg/kg	2 U	2 U	2 U	-
Nickel (Ni)	mg/kg	11	23	26	-
Potassium (K)	mg/kg	640	1900	2400	-
Selenium (Se)	mg/kg	0.5 U	0.5 U	0.5 U	-
Silver (Ag)	mg/kg	1.3 U	1.3 U	1.5 U	-
Sodium (Na)	mg/kg	530	270	500	-
Thallium (Tl)	mg/kg	10 U	10 U	10 U	-
Vanadium (V)	mg/kg	22	37	40	-
Zinc (Zn)	mg/kg	1600	110	87	-
ASBESTOS					
Chrysotile	%	1 U	-	-	-

B = Analyte in blank
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TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB06-0001	UPCA-SB06-0501	UPCA-SB06-0801	UPCA-SB06-1101
VOLATILE ORGANICS					
Methylene Chloride	µg/kg	-	-	4 J	3 J
Tetrachloroethene	µg/kg	-	-	7 U	7 U
Toluene	µg/kg	-	-	7 U	7 U
SEMIVOLATILE ORGANICS					
Acenaphthene	µg/g	1 U	-	2.3 U	1 U
Anthracene	µg/g	1 U	-	2.3 U	1 U
Benzo(a)anthracene	µg/g	1 U	-	2.3 U	1 U
Benzo(a)pyrene	µg/g	1 U	-	2.3 U	1 U
Benzo(b)fluoranthene	µg/g	1 U	-	2.3 U	1 U
Benzo(ghi)perylene	µg/g	1 U	-	2.3 U	1 U
Benzo(k)fluoranthene	µg/g	1 U	-	2.3 U	1 U
Chrysene	µg/g	1 U	-	2.3 U	1 U
Di-n-butylphthalate	µg/g	1 U	-	2.3 U	1 U
Di-n-octylphthalate	µg/g	1 U	-	2.3 U	1 U
Fluoranthene	µg/g	1 U	-	2.3 U	1 U
Fluorene	µg/g	1 U	-	2.3 U	1 U
N-Nitrosodiphenylamine	µg/g	1 U	-	2.3 U	1 U
N-Nitrosodi-n-propylamine	µg/g	1 U	-	2.3 U	1 U
Phenanthrene	µg/g	1 U	-	2.3 U	1 U
Pyrene	µg/g	1 U	-	2.3 U	1 U
PESTICIDES/PCBs					
4,4'-DDD	µg/kg	18 P	-	7 U	-
4,4'-DDE	µg/kg	28	-	7 U	-
4,4'-DDT	µg/kg	12 P	-	7 U	-
Aldrin	µg/kg	6 U	-	7 U	-
Alpha-BHC	µg/kg	6 U	-	7 U	-
Chlordane	µg/kg	41 JP	-	70 U	-
Delta-BHC	µg/kg	6 U	-	7 U	-
Endosulfan sulfate	µg/kg	6 U	-	7 U	-
Endrin Aldehyde	µg/kg	6 U	-	7 U	-
Heptachlor	µg/kg	6 U	-	7 U	-
Heptachlor epoxide	µg/kg	6 U	-	7 U	-
Methoxychlor	µg/kg	3.6 J	-	7 U	-
PETROLEUM HYDROCARBONS					
TPH	µg/g	-	120	1180	160

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB06-0001	UPCA-SB06-0501	UPCA-SB06-0801	UPCA-SB06-1101
METALS					
Aluminum (Al)	mg/kg	4800	-	20000	18000
Antimony (Sb)	mg/kg	59	-	44	42 U
Arsenic (As)	mg/kg	56	-	31	16
Barium (Ba)	mg/kg	140	-	260	270
Beryllium (Be)	mg/kg	0.55	-	0.60	0.57 U
Cadmium (Cd)	mg/kg	9.0	-	8.3	8.1
Calcium (Ca)	mg/kg	30000	-	16000	20000
Chromium (Cr)	mg/kg	59	-	33	28
Cobalt (Co)	mg/kg	13	-	17	19
Copper (Cu)	mg/kg	120	-	51	37
Iron (Fe)	mg/kg	22000	-	25000	25000
Lead (Pb)	mg/kg	490	-	460	120
Magnesium (Mg)	mg/kg	940	-	8500	8900
Manganese (Mn)	mg/kg	230	-	450	710
Mercury (Hg)	mg/kg	2 U	-	2 U	2 U
Nickel (Ni)	mg/kg	25	-	31	30
Potassium (K)	mg/kg	1100	-	3600	3400
Selenium (Se)	mg/kg	1.5	-	0.5 U	0.5 U
Silver (Ag)	mg/kg	2.9	-	1.4 U	1.4 U
Sodium (Na)	mg/kg	340	-	310	320
Thallium (Tl)	mg/kg	10 U	-	10 U	10 U
Vanadium (V)	mg/kg	42	-	54	50
Zinc (Zn)	mg/kg	500	-	140	110
ASBESTOS					
Chrysotile	%	1 U	-	-	-

B = Analyte in blank
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TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB07-0001	UPCA-SB07-0801	UPCA-SB07-1101
VOLATILE ORGANICS				
Methylene Chloride	µg/kg	-	7 U	2 J
Tetrachloroethene	µg/kg	-	7 U	7 U
Toluene	µg/kg	-	7 U	7 U
SEMIVOLATILE ORGANICS				
Acenaphthene	µg/g	1.8 U	1 U	1 U
Anthracene	µg/g	1.8 U	1 U	1 U
Benzo(a)anthracene	µg/g	1.8 U	1 U	1 U
Benzo(a)pyrene	µg/g	1.8 U	1 U	1 U
Benzo(b)fluoranthene	µg/g	1.8 U	1 U	1 U
Benzo(ghi)perylene	µg/g	1.8 U	1 U	1 U
Benzo(k)fluoranthene	µg/g	1.8 U	1 U	1 U
Chrysene	µg/g	1.8 U	1 U	1 U
Di-n-butylphthalate	µg/g	1.8 U	1 U	1 U
Di-n-octylphthalate	µg/g	1.8 U	1 U	1 U
Fluoranthene	µg/g	1.8 U	1 U	1 U
Fluorene	µg/g	1.8 U	1 U	1 U
N-Nitrosodiphenylamine	µg/g	1.8 U	1 U	1 U
N-Nitrosodi-n-propylamine	µg/g	1.8 U	1 U	1 U
Phenanthrene	µg/g	1.8 U	1 U	1 U
Pyrene	µg/g	1.8 U	1 U	1 U
PESTICIDES/PCBs				
4,4'-DDD	µg/kg	50 U	6 U	-
4,4'-DDE	µg/kg	50 U	6 U	-
4,4'-DDT	µg/kg	50 U	6 U	-
Aldrin	µg/kg	50 U	6 U	-
Alpha-BHC	µg/kg	50 U	6 U	-
Chlordane	µg/kg	500 U	60 U	-
Delta-BHC	µg/kg	50 U	6 U	-
Endosulfan sulfate	µg/kg	50 U	6 U	-
Endrin Aldehyde	µg/kg	50 U	6 U	-
Heptachlor	µg/kg	50 U	6 U	-
Heptachlor epoxide	µg/kg	50 U	6 U	-
Methoxychlor	µg/kg	50 U	6 U	-
PETROLEUM HYDROCARBONS				
TPH	µg/g	-	-	10 U

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB07-0001	UPCA-SB07-0801	UPCA-SB07-1101
METALS				
Aluminum (Al)	mg/kg	870	6200	7700
Antimony (Sb)	mg/kg	31 U	46	41 U
Arsenic (As)	mg/kg	4.6	7.6	12
Barium (Ba)	mg/kg	21	190	100
Beryllium (Be)	mg/kg	0.41 U	0.49 U	0.54 U
Cadmium (Cd)	mg/kg	1.3	3.5	3.7
Calcium (Ca)	mg/kg	1500	9100	6700
Chromium (Cr)	mg/kg	3.1	13	13
Cobalt (Co)	mg/kg	2.7	11	7.7
Copper (Cu)	mg/kg	21	8.6	13
Iron (Fe)	mg/kg	4800	12000	12000
Lead (Pb)	mg/kg	95	17	220
Magnesium (Mg)	mg/kg	270	4500	3300
Manganese (Mn)	mg/kg	77	280	230
Mercury (Hg)	mg/kg	2 U	2 U	2 U
Nickel (Ni)	mg/kg	2.9	20	15
Potassium (K)	mg/kg	240	1200	1500
Selenium (Se)	mg/kg	0.5 U	0.5 U	0.5 U
Silver (Ag)	mg/kg	1.0 U	1.2 U	1.4 U
Sodium (Na)	mg/kg	37	250	120
Thallium (Tl)	mg/kg	10 U	10 U	10 U
Vanadium (V)	mg/kg	13	22	22
Zinc (Zn)	mg/kg	71	41	43
ASBESTOS				
Chrysotile	%	1 U	-	-

B = Analyte in blank
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TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB08-0301	UPCA-SB08-0801	UPCA-SB08-1101
VOLATILE ORGANICS				
Methylene Chloride	µg/kg	-	8	7 U
Tetrachloroethene	µg/kg	-	7 U	7 U
Toluene	µg/kg	-	7 U	7 U
SEMIVOLATILE ORGANICS				
Acenaphthene	µg/g	1 U	1 U	1 U
Anthracene	µg/g	1 U	1 U	1 U
Benzo(a)anthracene	µg/g	1 U	1 U	1 U
Benzo(a)pyrene	µg/g	1 U	1 U	1 U
Benzo(b)fluoranthene	µg/g	1 U	1 U	1 U
Benzo(ghi)perylene	µg/g	1 U	1 U	1 U
Benzo(k)fluoranthene	µg/g	1 U	1 U	1 U
Chrysene	µg/g	1 U	1 U	1 U
Di-n-butylphthalate	µg/g	1 U	1 U	1 U
Di-n-octylphthalate	µg/g	1 U	1 U	1 U
Fluoranthene	µg/g	1 U	1 U	1 U
Fluorene	µg/g	1 U	1 U	1 U
N-Nitrosodiphenylamine	µg/g	1 U	1 U	1 U
N-Nitrosodi-n-propylamine	µg/g	1 U	1 U	1 U
Phenanthrene	µg/g	1 U	1 U	1 U
Pyrene	µg/g	1 U	1 U	1 U
PESTICIDES/PCBs				
4,4'-DDD	µg/kg	7 U	7 U	-
4,4'-DDE	µg/kg	7 U	7 U	-
4,4'-DDT	µg/kg	7 U	7 U	-
Aldrin	µg/kg	7 U	7 U	-
Alpha-BHC	µg/kg	7 U	7 U	-
Chlordane	µg/kg	70 U	70 U	-
Delta-BHC	µg/kg	7 U	7 U	-
Endosulfan sulfate	µg/kg	7 U	7 U	-
Endrin Aldehyde	µg/kg	7 U	7 U	-
Heptachlor	µg/kg	7 U	7 U	-
Heptachlor epoxide	µg/kg	7 U	7 U	-
Methoxychlor	µg/kg	7 U	7 U	-
PETROLEUM HYDROCARBONS				
TPH	µg/g	-	-	10 U

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB08-0301	UPCA-SB08-0801	UPCA-SB08-1101
METALS				
Aluminum (Al)	mg/kg	14000	13000	13000
Antimony (Sb)	mg/kg	15 U	16 U	15 U
Arsenic (As)	mg/kg	4.6	25	4.3
Barium (Ba)	mg/kg	310	250	250
Beryllium (Be)	mg/kg	0.68	0.68	0.69
Cadmium (Cd)	mg/kg	1.3 U	1.3 U	1.4 U
Calcium (Ca)	mg/kg	4400	4300	12000
Chromium (Cr)	mg/kg	18	16	15
Cobalt (Co)	mg/kg	11	8.5	9.0
Copper (Cu)	mg/kg	24	26	17
Iron (Fe)	mg/kg	20000	17000	18000
Lead (Pb)	mg/kg	130	120	16
Magnesium (Mg)	mg/kg	4300	3800	5200
Manganese (Mn)	mg/kg	460	200	510
Mercury (Hg)	mg/kg	2.0 U	2.0 U	2.0 U
Nickel (Ni)	mg/kg	22	22	19
Potassium (K)	mg/kg	2400	1500	1900
Selenium (Se)	mg/kg	0.50 U	0.5 U	0.50 U
Silver (Ag)	mg/kg	1.3 U	1.3 U	1.4 U
Sodium (Na)	mg/kg	250	100	120
Thallium (Tl)	mg/kg	10 U	10 U	10 U
Vanadium (V)	mg/kg	39	35	30
Zinc (Zn)	mg/kg	100	81	65
ASBESTOS				
Chrysotile	%	1 U	-	-

B = Analyte in blank
U = Nondetected
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TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB09-0001	UPCA-SB09-0801	UPCA-SB09-1101
VOLATILE ORGANICS				
Methylene Chloride	µg/kg	-	6 U	7 U
Tetrachloroethene	µg/kg	-	6 U	7 U
Toluene	µg/kg	-	6 U	7 U
SEMIVOLATILE ORGANICS				
Acenaphthene	µg/g	1.8 U	1 U	1 U
Anthracene	µg/g	1.8 U	2.4	1 U
Benzo(a)anthracene	µg/g	1.8 U	3.2	1 U
Benzo(a)pyrene	µg/g	1.8 U	2.6	1 U
Benzo(b)fluoranthene	µg/g	1.8 U	2.3	1 U
Benzo(ghi)perylene	µg/g	1.8 U	1 U	1 U
Benzo(k)fluoranthene	µg/g	1.8 U	2.3	1 U
Chrysene	µg/g	1.8 U	2.7	1 U
Di-n-butylphthalate	µg/g	1.8 U	3.1	1 U
Di-n-octylphthalate	µg/g	1.8 U	3.1	1.7
Fluoranthene	µg/g	2	5.3	1 U
Fluorene	µg/g	1.8 U	1 U	1 U
N-Nitrosodiphenylamine	µg/g	1.8 U	1 U	1 U
N-Nitrosodi-n-propylamine	µg/g	1.8 U	1 U	1 U
Phenanthrene	µg/g	1.8 U	5.6	1 U
Pyrene	µg/g	1.8 U	4.6	1 U
PESTICIDES/PCBs				
4,4'-DDD	µg/kg	1.5 J	30 U	-
4,4'-DDE	µg/kg	2.6 JP	3.8 JP	-
4,4'-DDT	µg/kg	0.54 JP	30 U	-
Aldrin	µg/kg	5 U	30 U	-
Alpha-BHC	µg/kg	5 U	30 U	-
Chlordane	µg/kg	20 J	550	-
Delta-BHC	µg/kg	5 U	30 U	-
Endosulfan sulfate	µg/kg	5 U	30 U	-
Endrin Aldehyde	µg/kg	5 U	30 U	-
Heptachlor	µg/kg	5 U	8.8 P	-
Heptachlor epoxide	µg/kg	5 U	17	-
Methoxychlor	µg/kg	5 U	15	-
Endrin	µg/kg	0.65 J	30 U	-
PETROLEUM HYDROCARBONS				
TPH	µg/g	-	-	10 U

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB09-0001	UPCA-SB09-0801	UPCA-SB09-1101
METALS				
Aluminum (Al)	mg/kg	6900	8000	17000
Antimony (Sb)	mg/kg	33 U	37 U	40 U
Arsenic (As)	mg/kg	16	19	8.4
Barium (Ba)	mg/kg	170	130	250
Beryllium (Be)	mg/kg	0.44 U	0.49 U	0.54 U
Cadmium (Cd)	mg/kg	6.9	4.9	6.5
Calcium (Ca)	mg/kg	6700	5100	11000
Chromium (Cr)	mg/kg	16	16	25
Cobalt (Co)	mg/kg	9.8	8.8	14
Copper (Cu)	mg/kg	100	43	23
Iron (Fe)	mg/kg	25000	15000	20000
Lead (Pb)	mg/kg	370	270	18
Magnesium (Mg)	mg/kg	2500	3100	6400
Manganese (Mn)	mg/kg	420	250	380
Mercury (Hg)	mg/kg	2.0 U	2.0 U	2.0 U
Nickel (Ni)	mg/kg	14	15	26
Potassium (K)	mg/kg	1700	1400	3400
Selenium (Se)	mg/kg	0.50 U	0.50 U	0.50 U
Silver (Ag)	mg/kg	1.2	1.2 U	1.3 U
Sodium (Na)	mg/kg	200	280	480
Thallium (Tl)	mg/kg	10 U	10 U	10 U
Vanadium (V)	mg/kg	20	22	43
Zinc (Zn)	mg/kg	230	120	88
ASBESTOS				
Chrysotile	%	1 U	-	-

B = Analyte in blank
U = Nondetected
J = Estimated value
BQ = Value may not be site-related
P = Greater than 25% difference between Quant and Confirm GC analysis, lower of two values is reported following EPA guidelines
- = Not analyzed

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB10-0301	UPCA-SB10-0601	UPCA-SB10-0901	UPCA-SB10-1101
VOLATILE ORGANICS					
Methylene Chloride	µg/kg	-	-	7 U	7 U
Tetrachloroethene	µg/kg	-	-	7 U	7 U
Toluene	µg/kg	-	-	7 U	7 U
SEMIVOLATILE ORGANICS					
Acenaphthene	µg/g	2.2 U	-	1.6	6
Anthracene	µg/g	2.2 U	-	1 U	5.3
Benzo(a)anthracene	µg/g	3.1	-	1 U	2.4 U
Benzo(a)pyrene	µg/g	3.3	-	1 U	2.4 U
Benzo(b)fluoranthene	µg/g	2.7	-	1 U	2.4 U
Benzo(ghi)perylene	µg/g	2.2 U	-	1 U	2.4 U
Benzo(k)fluoranthene	µg/g	3	-	1 U	2.4 U
Chrysene	µg/g	3.1	-	1 U	2.4 U
Di-n-butylphthalate	µg/g	2.2 U	-	1 U	2.4 U
Di-n-octylphthalate	µg/g	2.2 U	-	1 U	2.4 U
Dibenzofuran	µg/g	2.2 U	-	1 U	3.6
Fluoranthene	µg/g	8.1	-	3.4	9.7
Fluorene	µg/g	2.2 U	-	1.1	5
N-Nitrosodiphenylamine	µg/g	2.2 U	-	1 U	2.6
N-Nitrosodi-n-propylamine	µg/g	2.2 U	-	1 U	2.4 U
Phenanthrene	µg/g	7.1	-	2.8	14
Pyrene	µg/g	6.8	-	2.2	6.2
Napthalene	µg/g	2.2 U	-	1 U	2.6
PESTICIDES/PCBs					
4,4'-DDD	µg/kg	7 U	-	8 U	-
4,4'-DDE	µg/kg	7 U	-	8 U	-
4,4'-DDT	µg/kg	8.5	-	8 U	-
Aldrin	µg/kg	7 U	-	8 U	-
Alpha-BHC	µg/kg	7 U	-	8 U	-
Chlordane	µg/kg	70 U	-	80 U	-
Delta-BHC	µg/kg	7 U	-	8 U	-
Endosulfan sulfate	µg/kg	7 U	-	8 U	-
Endrin Aldehyde	µg/kg	7 U	-	8 U	-
Heptachlor	µg/kg	7 U	-	8 U	-
Heptachlor epoxide	µg/kg	7 U	-	8 U	-
Methoxychlor	µg/kg	7 U	-	8 U	-
PETROLEUM HYDROCARBONS					
TPH	µg/g	-	2160	-	10 U

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB10-0301	UPCA-SB10-0601	UPCA-SB10-0901	UPCA-SB10-1101
METALS					
Aluminum (Al)	mg/kg	5900	-	8700	21000
Antimony (Sb)	mg/kg	15 U	-	17 U	18 U
Arsenic (As)	mg/kg	14	-	27	21
Barium (Ba)	mg/kg	210	-	220	290
Beryllium (Be)	mg/kg	0.58	-	0.56	1.0
Cadmium (Cd)	mg/kg	1.3 U	-	1.4 U	1.5 U
Calcium (Ca)	mg/kg	16000	-	13000	16000
Chromium (Cr)	mg/kg	16	-	16	26
Cobalt (Co)	mg/kg	6.9	-	8.4	12
Copper (Cu)	mg/kg	72	-	37	29
Iron (Fe)	mg/kg	17000	-	17000	24000
Lead (Pb)	mg/kg	300	-	160	200
Magnesium (Mg)	mg/kg	3800	-	5300	8600
Manganese (Mn)	mg/kg	300	-	350	620
Mercury (Hg)	mg/kg	2.0 U	-	2.0 U	2.0 U
Nickel (Ni)	mg/kg	16	-	19	28
Potassium (K)	mg/kg	680	-	1300	3100
Selenium (Se)	mg/kg	0.50	-	0.80	0.50 U
Silver (Ag)	mg/kg	1.3 U	-	1.4 U	1.5 U
Sodium (Na)	mg/kg	190	-	300	530
Thallium (Tl)	mg/kg	10 U	-	10 U	10 U
Vanadium (V)	mg/kg	19	-	27	51
Zinc (Zn)	mg/kg	250	-	110	100
ASBESTOS					
Chrysotile	%	2	-	-	-

B = Analyte in blank
U = Nondetected
J = Estimated value
BQ = Value may not be site-related
P = Greater than 25% difference between Quant and Confirm GC analysis, lower of two values is reported following EPA guidelines
- = Not analyzed

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB11-0001	UPCA-SB11-0801	UPCA-SB11-1101
VOLATILE ORGANICS				
Methylene Chloride	µg/kg	-	4 J	6 U
Tetrachloroethene	µg/kg	-	6 U	6 U
Toluene	µg/kg	-	6 U	6 U
SEMIVOLATILE ORGANICS				
Acenaphthene	µg/g	1.9 U	1 U	1 U
Anthracene	µg/g	1.9 U	1 U	1 U
Benzo(a)anthracene	µg/g	1.9 U	1 U	1 U
Benzo(a)pyrene	µg/g	1.9 U	1 U	1 U
Benzo(b)fluoranthene	µg/g	2.2	1 U	1 U
Benzo(ghi)perylene	µg/g	1.9 U	1 U	1 U
Benzo(k)fluoranthene	µg/g	1.9 U	1 U	1 U
Chrysene	µg/g	2.1	1 U	1 U
Di-n-butylphthalate	µg/g	1.9 U	1 U	1 U
Di-n-octylphthalate	µg/g	1.9 U	1 U	1 U
Fluoranthene	µg/g	4.5	1 U	1 U
Fluorene	µg/g	1.9 U	1 U	1 U
N-Nitrosodiphenylamine	µg/g	1.9 U	1 U	1 U
N-Nitrosodi-n-propylamine	µg/g	1.9 U	1 U	1 U
Phenanthrene	µg/g	3.6	1 U	1 U
Pyrene	µg/g	3.4	1 U	1 U
PESTICIDES/PCBs				
4,4'-DDD	µg/kg	7 U	6 U	-
4,4'-DDE	µg/kg	7 U	6 U	-
4,4'-DDT	µg/kg	7 U	6 U	-
Aldrin	µg/kg	7 U	6 U	-
Alpha-BHC	µg/kg	7 U	6 U	-
Chlordane	µg/kg	380	360	-
Delta-BHC	µg/kg	7 U	6 U	-
Endosulfan sulfate	µg/kg	7 U	6 U	-
Endrin Aldehyde	µg/kg	7 U	6 U	-
Heptachlor	µg/kg	7 U	6 U	-
Heptachlor epoxide	µg/kg	7 U	6 U	-
Methoxychlor	µg/kg	7.4	12	-
PETROLEUM HYDROCARBONS				
TPH	µg/g	-	-	10 U

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB11-0001	UPCA-SB11-0801	UPCA-SB11-1101
METALS				
Aluminum (Al)	mg/kg	5400	5100	2300
Antimony (Sb)	mg/kg	24 U	24 U	21 U
Arsenic (As)	mg/kg	42	7.4	3.9
Barium (Ba)	mg/kg	200	190	93
Beryllium (Be)	mg/kg	0.45 U	0.50 U	0.43 U
Cadmium (Cd)	mg/kg	19	4.9	2.8
Calcium (Ca)	mg/kg	4700	7600	4600
Chromium (Cr)	mg/kg	41	10	5.7
Cobalt (Co)	mg/kg	13	9.1	5.5
Copper (Cu)	mg/kg	180	9.9	3.4
Iron (Fe)	mg/kg	49000	11000	6800
Lead (Pb)	mg/kg	1300	28	7.3
Magnesium (Mg)	mg/kg	1700	3900	2300
Manganese (Mn)	mg/kg	370	240	130
Mercury (Hg)	mg/kg	2.0 U	2.0 U	2.0 U
Nickel (Ni)	mg/kg	40	18	10
Potassium (K)	mg/kg	1300	1100	500
Selenium (Se)	mg/kg	0.50	0.50 U	0.50 U
Silver (Ag)	mg/kg	1.6	1.2 U	1.1 U
Sodium (Na)	mg/kg	130	130	78
Thallium (Tl)	mg/kg	10 U	10 U	10 U
Vanadium (V)	mg/kg	21	19	10
Zinc (Zn)	mg/kg	470	56	20
ASBESTOS				
Chrysotile	%	1 U	-	-

B = Analyte in blank
U = Nondetected
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BQ = Value may not be site-related
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- = Not analyzed

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB12-0301	UPCA-SB12-0801	UPCA-SB12-1101
VOLATILE ORGANICS				
Methylene Chloride	µg/kg	-	6 U	7 U
Tetrachloroethene	µg/kg	-	6 U	7 U
Toluene	µg/kg	-	6 U	7 U
SEMIVOLATILE ORGANICS				
Acenaphthene	µg/g	1 U	1 U	1 U
Anthracene	µg/g	1 U	1 U	1 U
Benzo(a)anthracene	µg/g	1 U	1 U	1 U
Benzo(a)pyrene	µg/g	1 U	1 U	1 U
Benzo(b)fluoranthene	µg/g	1 U	1 U	1 U
Benzo(ghi)perylene	µg/g	1 U	1 U	1 U
Benzo(k)fluoranthene	µg/g	1 U	1 U	1 U
Chrysene	µg/g	1 U	1 U	1 U
Di-n-butylphthalate	µg/g	1 U	1 U	1 U
Di-n-octylphthalate	µg/g	1 U	1 U	1 U
Fluoranthene	µg/g	1 U	1 U	1 U
Fluorene	µg/g	1 U	1 U	1 U
N-Nitrosodiphenylamine	µg/g	1 U	1 U	1 U
N-Nitrosodi-n-propylamine	µg/g	1 U	1 U	1 U
Phenanthrene	µg/g	1 U	1 U	1 U
Pyrene	µg/g	1 U	1 U	1 U
PESTICIDES/PCBs				
4,4'-DDD	µg/kg	6 U	7 U	-
4,4'-DDE	µg/kg	6 U	6 U	-
4,4'-DDT	µg/kg	6 U	6 U	-
Aldrin	µg/kg	6 U	6 U	-
Alpha-BHC	µg/kg	6 U	6 U	-
Chlordane	µg/kg	60 U	70 U	-
Delta-BHC	µg/kg	6 U	7 U	-
Endosulfan sulfate	µg/kg	6 U	7 U	-
Endrin Aldehyde	µg/kg	6 U	7 U	-
Heptachlor	µg/kg	6 U	7 U	-
Heptachlor epoxide	µg/kg	6 U	7 U	-
Methoxychlor	µg/kg	6 U	7 U	-
PETROLEUM HYDROCARBONS				
TPH	µg/g	-	-	10 U

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB12-0301	UPCA-SB12-0801	UPCA-SB12-1101
METALS				
Aluminum (Al)	mg/kg	2700	3300	20000
Antimony (Sb)	mg/kg	13 U	15 U	17 U
Arsenic (As)	mg/kg	3.5	15	9.2
Barium (Ba)	mg/kg	150	150	260
Beryllium (Be)	mg/kg	0.42 U	0.52 U	1.1
Cadmium (Cd)	mg/kg	1.1 U	1.3 U	1.5 U
Calcium (Ca)	mg/kg	7800	11000	17000
Chromium (Cr)	mg/kg	4.8	5.9	24
Cobalt (Co)	mg/kg	3.9	5.4	13
Copper (Cu)	mg/kg	8.1	4.2	26
Iron (Fe)	mg/kg	7500	9600	26000
Lead (Pb)	mg/kg	26	87	17
Magnesium (Mg)	mg/kg	2700	4100	8100
Manganese (Mn)	mg/kg	140	160	650
Mercury (Hg)	mg/kg	2.0 U	2.0 U	2.0 U
Nickel (Ni)	mg/kg	8.4	10	28
Potassium (K)	mg/kg	250	350	3600
Selenium (Se)	mg/kg	0.50 U	0.50 U	0.50 U
Silver (Ag)	mg/kg	1.0 U	1.3 U	1.5 U
Sodium (Na)	mg/kg	99	110	260
Thallium (Tl)	mg/kg	10 U	10 U	10 U
Vanadium (V)	mg/kg	10	13	47
Zinc (Zn)	mg/kg	28	30	88
ASBESTOS				
Chrysotile	%	1 U	-	-

B = Analyte in blank
U = Nondetected
J = Estimated value
BQ = Value may not be site-related
P = Greater than 25% difference between Quant and Confirm GC analysis, lower of two values is reported following EPA guidelines
- = Not analyzed

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB13-0001	UPCA-SB13-0801	UPCA-SB13-1101	UPCA-SB13-1601
VOLATILE ORGANICS					
Methylene Chloride	µg/kg	-	1 J	7 U	3 J
Tetrachloroethene	µg/kg	-	7 U	7 U	8 U
Toluene	µg/kg	-	7 U	7 U	8 U
SEMIVOLATILE ORGANICS					
Acenaphthene	µg/g	1.9 U	-	1 U	1 U
Anthracene	µg/g	1.9 U	-	1 U	1 U
Benzo(a)anthracene	µg/g	1.9 U	-	1 U	1 U
Benzo(a)pyrene	µg/g	1.9 U	-	1 U	1 U
Benzo(b)fluoranthene	µg/g	1.9 U	-	1 U	1 U
Benzo(ghi)perylene	µg/g	1.9 U	-	1 U	1 U
Benzo(k)fluoranthene	µg/g	1.9 U	-	1 U	1 U
Chrysene	µg/g	1.9 U	-	1 U	1 U
Di-n-butylphthalate	µg/g	1.9 U	-	5.2	1 U
Di-n-octylphthalate	µg/g	1.9 U	-	1 U	1.8
Fluoranthene	µg/g	1.9 U	-	1 U	1 U
Fluorene	µg/g	1.9 U	-	1 U	1 U
N-Nitrosodiphenylamine	µg/g	1.9 U	-	1 U	1 U
N-Nitrosodi-n-propylamine	µg/g	1.9 U	-	1 U	1 U
Phenanthrene	µg/g	1.9 U	-	1 U	1 U
Pyrene	µg/g	1.9 U	-	1 U	1 U
PESTICIDES/PCBs					
4,4'-DDD	µg/kg	9.8	-	-	-
4,4'-DDE	µg/kg	9.2 P	-	-	-
4,4'-DDT	µg/kg	4.2 JP	-	-	-
Aldrin	µg/kg	6 U	-	-	-
Alpha-BHC	µg/kg	6 U	-	-	-
Chlordane	µg/kg	82 P	-	-	-
Delta-BHC	µg/kg	6 U	-	-	-
Endosulfan sulfate	µg/kg	6 U	-	-	-
Endrin Aldehyde	µg/kg	3.6 JP	-	-	-
Heptachlor	µg/kg	6 U	-	-	-
Heptachlor epoxide	µg/kg	6 U	-	-	-
Methoxychlor	µg/kg	7.3	-	-	-
Dieldrin	µg/kg	3.6 JP	-	-	-
PETROLEUM HYDROCARBONS					
TPH	µg/g	-	-	10 U	10 U

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB13-0001	UPCA-SB13-0801	UPCA-SB13-1101	UPCA-SB13-1601
METALS					
Aluminum (Al)	mg/kg	6200	-	11000	-
Antimony (Sb)	mg/kg	39	-	42 U	-
Arsenic (As)	mg/kg	13	-	3.6	-
Barium (Ba)	mg/kg	150	-	280	-
Beryllium (Be)	mg/kg	0.45 U	-	0.56 U	-
Cadmium (Cd)	mg/kg	7.0	-	4.3	-
Calcium (Ca)	mg/kg	17000	-	21000	-
Chromium (Cr)	mg/kg	29	-	19	-
Cobalt (Co)	mg/kg	22	-	14	-
Copper (Cu)	mg/kg	110	-	18	-
Iron (Fe)	mg/kg	14000	-	14000	-
Lead (Pb)	mg/kg	310	-	65	-
Magnesium (Mg)	mg/kg	16000	-	4800	-
Manganese (Mn)	mg/kg	420	-	500	-
Mercury (Hg)	mg/kg	2.0 U	-	2.0 U	-
Nickel (Ni)	mg/kg	24	-	21	-
Potassium (K)	mg/kg	1800	-	2100	-
Selenium (Se)	mg/kg	0.60	-	0.50 U	-
Silver (Ag)	mg/kg	1.1 U	-	1.4 U	-
Sodium (Na)	mg/kg	530	-	220	-
Thallium (Tl)	mg/kg	10 U	-	10 U	-
Vanadium (V)	mg/kg	24	-	28	-
Zinc (Zn)	mg/kg	180	-	91	-
ASBESTOS					
Chrysotile	%	2	-	-	-

B = Analyte in blank
U = Nondetected
J = Estimated value
BQ = Value may not be site-related
P = Greater than 25% difference between Quant and Confirm GC analysis, lower of two values is reported following EPA guidelines
- = Not analyzed

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB14-0001	UPCA-SB14-0801	UPCA-SB14-1101
VOLATILE ORGANICS				
Methylene Chloride	µg/kg	-	3 J	2 J
Tetrachloroethene	µg/kg	-	5 U	7 U
Toluene	µg/kg	-	2 J	7 U
SEMIVOLATILE ORGANICS				
Acenaphthene	µg/g	1.8 U	1 U	1 U
Anthracene	µg/g	1.8 U	1 U	1 U
Benzo(a)anthracene	µg/g	1.8 U	1 U	1 U
Benzo(a)pyrene	µg/g	1.8 U	1 U	1 U
Benzo(b)fluoranthene	µg/g	1.8 U	1 U	1 U
Benzo(ghi)perylene	µg/g	1.8 U	1 U	1 U
Benzo(k)fluoranthene	µg/g	1.8 U	1 U	1 U
Chrysene	µg/g	1.8 U	1 U	1 U
Di-n-butylphthalate	µg/g	1.8 U	1 U	1 U
Di-n-octylphthalate	µg/g	1.8 U	1 U	1 U
Fluoranthene	µg/g	1.8 U	1 U	1 U
Fluorene	µg/g	1.8 U	1 U	1 U
N-Nitrosodiphenylamine	µg/g	1.8 U	1 U	1 U
N-Nitrosodi-n-propylamine	µg/g	1.8 U	1 U	1 U
Phenanthrene	µg/g	1.8 U	1 U	1 U
Pyrene	µg/g	1.8 U	1 U	1 U
PESTICIDES/PCBs				
4,4'-DDD	µg/kg	28 U	6 U	-
4,4'-DDE	µg/kg	28 U	6 U	-
4,4'-DDT	µg/kg	28 U	6 U	-
Aldrin	µg/kg	28 U	6 U	-
Alpha-BHC	µg/kg	28 U	6 U	-
Chlordane	µg/kg	280 U	60 U	-
Delta-BHC	µg/kg	28 U	6 U	-
Endosulfan sulfate	µg/kg	28 U	6 U	-
Endrin Aldehyde	µg/kg	28 U	6 U	-
Heptachlor	µg/kg	28 U	6 U	-
Heptachlor epoxide	µg/kg	28 U	6 U	-
Methoxychlor	µg/kg	28 U	6 U	-
Aroclor - 1260	µg/kg	330	60 U	-
PETROLEUM HYDROCARBONS				
TPH	µg/g	-	-	10 U

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB14-0001	UPCA-SB14-0801	UPCA-SB14-1101
METALS				
Aluminum (Al)	mg/kg	3800	4400	8600
Antimony (Sb)	mg/kg	22 U	22 U	26 U
Arsenic (As)	mg/kg	79	7.3	5.3
Barium (Ba)	mg/kg	160	220	220
Beryllium (Be)	mg/kg	0.44 U	0.43 U	0.51 U
Cadmium (Cd)	mg/kg	13	4.2	5.7
Calcium (Ca)	mg/kg	7200	5700	17000
Chromium (Cr)	mg/kg	13	8.3	16
Cobalt (Co)	mg/kg	8.3	9.7	12
Copper (Cu)	mg/kg	120	11	16
Iron (Fe)	mg/kg	17000	9800	13000
Lead (Pb)	mg/kg	1800	14	17
Magnesium (Mg)	mg/kg	2200	2600	6600
Manganese (Mn)	mg/kg	310	240	230
Mercury (Hg)	mg/kg	2.0 U	2.0 U	2.0 U
Nickel (Ni)	mg/kg	20	20	22
Potassium (K)	mg/kg	840	810	1800
Selenium (Se)	mg/kg	1.4	0.50 U	0.50 U
Silver (Ag)	mg/kg	4.7	1.1 U	1.3 U
Sodium (Na)	mg/kg	130	120	200
Thallium (Tl)	mg/kg	10 U	10 U	10 U
Vanadium (V)	mg/kg	15	16	31
Zinc (Zn)	mg/kg	770	40	45
ASBESTOS				
Chrysotile	%	1 U	-	-

B = Analyte in blank
U = Nondetected
J = Estimated value
BQ = Value may not be site-related
P = Greater than 25% difference between Quant and Confirm GC analysis, lower of two values is reported following EPA guidelines
- = Not analyzed

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB15-0001	UPCA-SB15-0801	UPCA-SB15-1101
VOLATILE ORGANICS				
Methylene Chloride	µg/kg	-	6 U	7 U
Tetrachloroethene	µg/kg	-	6 U	7 U
Toluene	µg/kg	-	6 U	7 U
SEMIVOLATILE ORGANICS				
Acenaphthene	µg/g	2 U	1 U	1 U
Anthracene	µg/g	2 U	1	1 U
Benzo(a)anthracene	µg/g	5.2	1.6	1 U
Benzo(a)pyrene	µg/g	5.3	1.3	1 U
Benzo(b)fluoranthene	µg/g	5.7	1 U	1 U
Benzo(ghi)perylene	µg/g	4.5	1 U	1 U
Benzo(k)fluoranthene	µg/g	4.6	1 U	1 U
Chrysene	µg/g	5.3	1.3	1 U
Di-n-butylphthalate	µg/g	2 U	1 U	1 U
Di-n-octylphthalate	µg/g	2 U	1 U	1 U
Fluoranthene	µg/g	8.5	3.2	1 U
Fluorene	µg/g	2 U	1 U	1 U
N-Nitrosodiphenylamine	µg/g	2 U	1 U	1 U
N-Nitrosodi-n-propylamine	µg/g	2 U	1 U	1 U
Phenanthrene	µg/g	7.3	3	1 U
Pyrene	µg/g	9.9	3	1 U
Napthalene	µg/g	2.2	1 U	1 U
Indeno(1,2,3-cd)pyrene	µg/g	4	1 U	1 U
PESTICIDES/PCBs				
4,4'-DDD	µg/kg	6 U	7 U	-
4,4'-DDE	µg/kg	6 U	7 U	-
4,4'-DDT	µg/kg	6 U	7 U	-
Aldrin	µg/kg	6 U	7 U	-
Alpha-BHC	µg/kg	6 U	7 U	-
Chlordane	µg/kg	60 U	70 U	-
Delta-BHC	µg/kg	6 U	7 U	-
Endosulfan sulfate	µg/kg	6 U	7 U	-
Endrin Aldehyde	µg/kg	6 U	7 U	-
Heptachlor	µg/kg	6 U	7 U	-
Heptachlor epoxide	µg/kg	6 U	7 U	-
Methoxychlor	µg/kg	6 U	7 U	-
PETROLEUM HYDROCARBONS				
TPH	µg/g	-	-	10 U

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB15-0001	UPCA-SB15-0801	UPCA-SB15-1101
METALS				
Aluminum (A1)	mg/kg	7100	14000	15000
Antimony (Sb)	mg/kg	13 U	16 U	17 U
Arsenic (As)	mg/kg	300	10	14
Barium (Ba)	mg/kg	240	390	230
Beryllium (Be)	mg/kg	0.93	0.88	0.8
Cadmium (Cd)	mg/kg	2.5	1.3	11
Calcium (Ca)	mg/kg	21000	18000	11000
Chromium (Cr)	mg/kg	33	21	19
Cobalt (Co)	mg/kg	6.8	12	9
Copper (Cu)	mg/kg	400	40	20
Iron (Fe)	mg/kg	23000	35000	18000
Lead (Pb)	mg/kg	1600	140	37
Magnesium (Mg)	mg/kg	2300	5300	6400
Manganese (Mn)	mg/kg	300	410	410
Mercury (Hg)	mg/kg	2.2	2 U	2 U
Nickel (Ni)	mg/kg	19	24	21
Potassium (K)	mg/kg	1000	2300	2600
Selenium (Se)	mg/kg	5.6	0.5 U	0.5 U
Silver (Ag)	mg/kg	6.7	1.3 U	1.4 U
Sodium (Na)	mg/kg	290	220	190
Thallium (Tl)	mg/kg	10 U	10 U	10 U
Vanadium (V)	mg/kg	26	42	36
Zinc (Zn)	mg/kg	710	170	74
ASBESTOS				
Chrysotile	%	1 U	-	-

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BQ = Value may not be site-related
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TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB16-0001	UPCA-SB16-0801	UPCA-SB16-1101
VOLATILE ORGANICS				
Methylene Chloride	µg/kg	-	3 J	14
Tetrachloroethene	µg/kg	-	6 U	6 U
Toluene	µg/kg	-	6 U	6 U
SEMIVOLATILE ORGANICS				
Acenaphthene	µg/g	2.1 U	1 U	4 U
Anthracene	µg/g	2.1 U	1 U	4 U
Benzo(a)anthracene	µg/g	2.1 U	1 U	4 U
Benzo(a)pyrene	µg/g	2.1 U	1 U	4 U
Benzo(b)fluoranthene	µg/g	2.1 U	1 U	4 U
Benzo(ghi)perylene	µg/g	2.1 U	1 U	4 U
Benzo(k)fluoranthene	µg/g	2.1 U	1 U	4 U
Chrysene	µg/g	2.1 U	1 U	4 U
Di-n-butylphthalate	µg/g	2.1 U	1 U	4 U
Di-n-octylphthalate	µg/g	2.1 U	1 U	4 U
Fluoranthene	µg/g	2.1 U	1 U	4 U
Fluorene	µg/g	2.1 U	1 U	4 U
N-Nitrosodiphenylamine	µg/g	2.1 U	1 U	4 U
N-Nitrosodi-n-propylamine	µg/g	2.1 U	1 U	4 U
Phenanthrene	µg/g	2.1 U	1 U	4 U
Pyrene	µg/g	2.1 U	1 U	4 U
Napthalene	µg/g	2.1 U	1 U	4 U
Indeno(1,2,3-cd)pyrene	µg/g	2.1 U	1 U	4 U
PESTICIDES/PCBs				
4,4'-DDD	µg/kg	28 U	7 U	-
4,4'-DDE	µg/kg	28 U	7 U	-
4,4'-DDT	µg/kg	28 U	7 U	-
Aldrin	µg/kg	28 U	7 U	-
Alpha-BHC	µg/kg	28 U	7 U	-
Chlordane	µg/kg	280 U	70 U	-
Delta-BHC	µg/kg	28 U	7 U	-
Endosulfan sulfate	µg/kg	28 U	7 U	-
Endrin Aldehyde	µg/kg	28 U	7 U	-
Heptachlor	µg/kg	28 U	7 U	-
Heptachlor epoxide	µg/kg	28 U	7 U	-
Methoxychlor	µg/kg	28 U	7 U	-
Aroclor - 1260	µg/kg	440	70 U	-
PETROLEUM HYDROCARBONS				
TPH	µg/g	-	-	10 U

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB16-0001	UPCA-SB16-0801	UPCA-SB16-1101
METALS				
Aluminum (Al)	mg/kg	4300	5500	2900
Antimony (Sb)	mg/kg	22 U	25 U	26 U
Arsenic (As)	mg/kg	64	5.8	4.5
Barium (Ba)	mg/kg	200	170	130
Beryllium (Be)	mg/kg	0.44 U	0.51 U	0.51 U
Cadmium (Cd)	mg/kg	7.4	4.6	3.2
Calcium (Ca)	mg/kg	4400	12000	8500
Chromium (Cr)	mg/kg	12	12	7.5
Cobalt (Co)	mg/kg	8.7	11	7.6
Copper (Cu)	mg/kg	86	7.7	4.7
Iron (Fe)	mg/kg	15000	13000	8500
Lead (Pb)	mg/kg	580	11	9.4
Magnesium (Mg)	mg/kg	1600	4700	3300
Manganese (Mn)	mg/kg	230	250	210
Mercury (Hg)	mg/kg	2.0 U	2.0 U	2.0 U
Nickel (Ni)	mg/kg	18	19	13
Potassium (K)	mg/kg	800	1200	640
Selenium (Se)	mg/kg	1.0	0.50 U	0.50 U
Silver (Ag)	mg/kg	1.3	1.3 U	1.3 U
Sodium (Na)	mg/kg	160	160	120
Thallium (Tl)	mg/kg	10 U	10 U	10 U
Vanadium (V)	mg/kg	19	22	13
Zinc (Zn)	mg/kg	340	38	27
ASBESTOS				
Chrysotile	%	1 U	-	-

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BQ = Value may not be site-related
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TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB17-0501	UPCA-SB17-0801	UPCA-SB17-1101
VOLATILE ORGANICS				
Methylene Chloride	µg/kg	-	7 U	6 U
Tetrachloroethene	µg/kg	-	7 U	6 U
Toluene	µg/kg	-	7 U	6 U
SEMIVOLATILE ORGANICS				
Acenaphthene	µg/g	1 U	1 U	1 U
Anthracene	µg/g	1 U	1 U	1 U
Benzo(a)anthracene	µg/g	1 U	1 U	1 U
Benzo(a)pyrene	µg/g	1 U	1 U	1 U
Benzo(b)fluoranthene	µg/g	1 U	1 U	1 U
Benzo(ghi)perylene	µg/g	1 U	1 U	1 U
Benzo(k)fluoranthene	µg/g	1 U	1 U	1 U
Chrysene	µg/g	1 U	1 U	1 U
Di-n-butylphthalate	µg/g	1 U	1 U	1 U
Di-n-octylphthalate	µg/g	1 U	1 U	1 U
Fluoranthene	µg/g	1 U	1 U	1 U
Fluorene	µg/g	1 U	1 U	1 U
N-Nitrosodiphenylamine	µg/g	1 U	1 U	1 U
N-Nitrosodi-n-propylamine	µg/g	1 U	1 U	1 U
Phenanthrene	µg/g	1 U	1 U	1 U
Pyrene	µg/g	1 U	1 U	1 U
Napthalene	µg/g	1 U	1 U	1 U
Indeno(1,2,3-cd)pyrene	µg/g	1 U	1 U	1 U
PESTICIDES/PCBs				
4,4'-DDD	µg/kg	7 U	7 U	-
4,4'-DDE	µg/kg	7 U	7 U	-
4,4'-DDT	µg/kg	7 U	7 U	-
Aldrin	µg/kg	7 U	7 U	-
Alpha-BHC	µg/kg	7 U	7 U	-
Chlordane	µg/kg	70 U	70 U	-
Delta-BHC	µg/kg	7 U	7 U	-
Endosulfan sulfate	µg/kg	7 U	7 U	-
Endrin Aldehyde	µg/kg	7 U	7 U	-
Heptachlor	µg/kg	7 U	7 U	-
Heptachlor epoxide	µg/kg	7 U	7 U	-
Methoxychlor	µg/kg	7 U	7 U	-
PETROLEUM HYDROCARBONS				
TPH	µg/g	-	10 U	10 U

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB17-0501	UPCA-SB17-0801	UPCA-SB17-1101
METALS				
Aluminum (A1)	mg/kg	11000	16000	6300
Antimony (Sb)	mg/kg	15 U	16 U	15 U
Arsenic (As)	mg/kg	6.6	4.9	2.9
Barium (Ba)	mg/kg	200	220	150
Beryllium (Be)	mg/kg	0.62	0.65	0.49 U
Cadmium (Cd)	mg/kg	1.3 U	1.3 U	1.2 U
Calcium (Ca)	mg/kg	10000	6500	7500
Chromium (Cr)	mg/kg	13	16	8.5
Cobalt (Co)	mg/kg	8.0	7.8	4.6
Copper (Cu)	mg/kg	20	14	6.6
Iron (Fe)	mg/kg	15000	18000	10000
Lead (Pb)	mg/kg	21	15	7.6
Magnesium (Mg)	mg/kg	5900	5400	4500
Manganese (Mn)	mg/kg	450	320	210
Mercury (Hg)	mg/kg	2.0 U	2.0 U	2.0 U
Nickel (Ni)	mg/kg	18	17	11
Potassium (K)	mg/kg	1200	1500	710
Selenium (Se)	mg/kg	0.50 U	0.5 U	0.50 U
Silver (Ag)	mg/kg	1.3 U	1.3 U	1.2 U
Sodium (Na)	mg/kg	300	180	150
Thallium (Tl)	mg/kg	10 U	10 U	10 U
Vanadium (V)	mg/kg	28	34	18
Zinc (Zn)	mg/kg	62	53	35
ASBESTOS				
Chrysotile	%	1 U	-	-

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TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB18-0001	UPCA-SB18-0801	UPCA-SB18-1101
VOLATILE ORGANICS				
Methylene Chloride	µg/kg	-	15	15
Tetrachloroethene	µg/kg	-	7 U	6 U
Toluene	µg/kg	-	7 U	6 U
SEMIVOLATILE ORGANICS				
Acenaphthene	µg/g	1.9 U	1 U	1 U
Anthracene	µg/g	1.9 U	1 U	1 U
Benzo(a)anthracene	µg/g	1.9 U	1 U	1 U
Benzo(a)pyrene	µg/g	1.9 U	1 U	1 U
Benzo(b)fluoranthene	µg/g	1.9 U	1 U	1 U
Benzo(ghi)perylene	µg/g	1.9 U	1 U	1 U
Benzo(k)fluoranthene	µg/g	1.9 U	1 U	1 U
Chrysene	µg/g	1.9 U	1 U	1 U
Di-n-butylphthalate	µg/g	1.9 U	1 U	1 U
Di-n-octylphthalate	µg/g	1.9 U	1 U	1 U
Fluoranthene	µg/g	1.9 U	1 U	1 U
Fluorene	µg/g	1.9 U	1 U	1 U
N-Nitrosodiphenylamine	µg/g	1.9 U	1 U	1 U
N-Nitrosodi-n-propylamine	µg/g	1.9 U	1 U	1 U
Phenanthrene	µg/g	1.9 U	1 U	1 U
Pyrene	µg/g	1.9 U	1 U	1 U
PESTICIDES/PCBs				
4,4'-DDD	µg/kg	6 U	7 U	1 U
4,4'-DDE	µg/kg	6 U	7 U	1 U
4,4'-DDT	µg/kg	6 U	7 U	1 U
Aldrin	µg/kg	6 U	7 U	1 U
Alpha-BHC	µg/kg	6 U	7 U	1 U
Chlordane	µg/kg	60 U	70 U	1 U
Delta-BHC	µg/kg	6 U	7 U	1 U
Endosulfan sulfate	µg/kg	6 U	7 U	1 U
Endrin Aldehyde	µg/kg	6 U	7 U	1 U
Heptachlor	µg/kg	6 U	7 U	1 U
Heptachlor epoxide	µg/kg	6 U	7 U	1 U
Methoxychlor	µg/kg	6 U	7 U	1 U
PETROLEUM HYDROCARBONS				
TPH	µg/g	-	-	10 U

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB18-0001	UPCA-SB18-0801	UPCA-SB18-1101
METALS				
Aluminum (Al)	mg/kg	3800	8700	2800
Antimony (Sb)	mg/kg	23 U	26 U	25 U
Arsenic (As)	mg/kg	36	5.3	5.5
Barium (Ba)	mg/kg	180	260	150
Beryllium (Be)	mg/kg	0.62	0.52 U	0.50 U
Cadmium (Cd)	mg/kg	9.4	6.7	8.0
Calcium (Ca)	mg/kg	5900	18000	10000
Chromium (Cr)	mg/kg	10	16	7.1
Cobalt (Co)	mg/kg	7.8	13	11
Copper (Cu)	mg/kg	160	16	7.6
Iron (Fe)	mg/kg	18000	16000	11000
Lead (Pb)	mg/kg	620	16	14
Magnesium (Mg)	mg/kg	1500	7400	3000
Manganese (Mn)	mg/kg	250	400	150
Mercury (Hg)	mg/kg	2.0 U	2.0 U	2.0 U
Nickel (Ni)	mg/kg	15	24	36
Potassium (K)	mg/kg	1000	2000	630
Selenium (Se)	mg/kg	0.50 U	0.50 U	0.50 U
Silver (Ag)	mg/kg	1.6	1.3 U	1.3 U
Sodium (Na)	mg/kg	250	280	120
Thallium (Tl)	mg/kg	10 U	10 U	10 U
Vanadium (V)	mg/kg	16	28	16
Zinc (Zn)	mg/kg	400	53	35
ASBESTOS				
Chrysotile	%	1 U	-	-

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TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB19-0001	UPCA-SB19-1101
VOLATILE ORGANICS			
Methylene Chloride	µg/kg	-	6 U
Tetrachloroethene	µg/kg	-	6 U
Toluene	µg/kg	-	6 U
SEMIVOLATILE ORGANICS			
Acenaphthene	µg/g	1 U	1 U
Anthracene	µg/g	1 U	1 U
Benzo(a)anthracene	µg/g	1 U	1 U
Benzo(a)pyrene	µg/g	1 U	1 U
Benzo(b)fluoranthene	µg/g	1 U	1 U
Benzo(ghi)perylene	µg/g	1 U	1 U
Benzo(k)fluoranthene	µg/g	1 U	1 U
Chrysene	µg/g	1 U	1 U
Di-n-butylphthalate	µg/g	1 U	1 U
Di-n-octylphthalate	µg/g	1 U	1 U
Fluoranthene	µg/g	1.2	1 U
Fluorene	µg/g	1 U	1 U
N-Nitrosodiphenylamine	µg/g	1 U	1 U
N-Nitrosodi-n-propylamine	µg/g	1 U	1 U
Phenanthrene	µg/g	1 U	1 U
Pyrene	µg/g	1 U	1 U
PESTICIDES/PCBs			
4,4'-DDD	µg/kg	6 U	-
4,4'-DDE	µg/kg	6 U	-
4,4'-DDT	µg/kg	6 U	-
Aldrin	µg/kg	6 U	-
Alpha-BHC	µg/kg	6 U	-
Chlordane	µg/kg	60 U	-
Delta-BHC	µg/kg	6 U	-
Endosulfan sulfate	µg/kg	6 U	-
Endrin Aldehyde	µg/kg	6 U	-
Heptachlor	µg/kg	6 U	-
Heptachlor epoxide	µg/kg	6 U	-
Methoxychlor	µg/kg	6 U	-
PETROLEUM HYDROCARBONS			
TPH	µg/g	-	10 U

TABLE 4-2
CONSTRUCTION AREA SOIL SAMPLING RESULTS
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	UPCA-SB19-0001	UPCA-SB19-1101
METALS			
Aluminum (A1)	mg/kg	5700	5100
Antimony (Sb)	mg/kg	13 U	15 U
Arsenic (As)	mg/kg	12	2.7
Barium (Ba)	mg/kg	180	79
Beryllium (Be)	mg/kg	1.1	0.49 U
Cadmium (Cd)	mg/kg	1.1 U	1.2 U
Calcium (Ca)	mg/kg	15000	5000
Chromium (Cr)	mg/kg	10	7.5
Cobalt (Co)	mg/kg	37	4.9
Copper (Cu)	mg/kg	140	7.1
Iron (Fe)	mg/kg	19000	8500
Lead (Pb)	mg/kg	280	24
Magnesium (Mg)	mg/kg	1600	3100
Manganese (Mn)	mg/kg	210	130
Mercury (Hg)	mg/kg	2.0 U	2.0 U
Nickel (Ni)	mg/kg	11	11
Potassium (K)	mg/kg	800	620
Selenium (Se)	mg/kg	0.60	0.50 U
Silver (Ag)	mg/kg	1.1 U	1.2 U
Sodium (Na)	mg/kg	240	130
Thallium (Tl)	mg/kg	10 U	10 U
Vanadium (V)	mg/kg	16	15
Zinc (Zn)	mg/kg	840	38
ASBESTOS			
Chrysotile	%	1 U	-

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U = Nondetected
J = Estimated value
BQ = Value may not be site-related
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- = Not analyzed

TABLE 4-3
CONSTRUCTION AREA SOIL SAMPLING RESULTS SUMMARY
PHASE II SITE ASSESSMENT
UPRR OMAHA SHOPS

	Units	Minimum	Maximum	Number Reported
SEMIVOLATILE ORGANICS				
Acenaphthene	µg/g	1.6	6	2
Anthracene	µg/g	1	5.3	3
Benzo(a)anthracene	µg/g	1.6	5.2	4
Benzo(a)pyrene	µg/g	1.3	5.3	4
Benzo(b)fluoranthene	µg/g	2.2	5.7	4
Benzo(ghi)perylene	µg/g	4.5		1
Benzo(k)fluoranthene	µg/g	2.3	4.6	3
Chrysene	µg/g	1	5.3	6
Di-n-butylphthalate	µg/g	2.6	17	6
Di-n-octylphthalate	µg/g	1.1	5.2	5
Dibenzofuran	µg/g	3.6		1
Fluoranthene	µg/g	1.9	9.7	12
Fluorene	µg/g	1.1	5	2
N-Nitrosodiphenylamine	µg/g	2.6	23 J	2
N-Nitrosodi-n-propylamine	µg/g	38 J		1
Phenanthrene	µg/g	1.7	34	10
Pyrene	µg/g	2.1	9.9	8
Napthalene	µg/g	2.2	2.6	2
Indeno(1,2,3-cd)pyrene	µg/g	4		1
PESTICIDES/PCBs				
4,4'-DDD	µg/kg	1.5 J	18 P	5
4,4'-DDE	µg/kg	0.65 JP	28	7
4,4'-DDT	µg/kg	0.54 JP	12 P	5
Aldrin	µg/kg	9.50		1
Alpha-BHC	µg/kg	2.8 J		1
Chlordane	µg/kg	11 JP	550	8
Delta-BHC	µg/kg	1.2 JP	1.4 JP	2
Endosulfan sulfate	µg/kg	1.2 JP	4.6 JP	2
Endrin Aldehyde	µg/kg	3.6 JP	4.4	2
Heptachlor	µg/kg	8.8 P		1
Heptachlor epoxide	µg/kg	1.0 JP	17	4
Methoxychlor	µg/kg	3.6 J	15	10
Endrin	µg/kg	0.65		1
Dieldrin	µg/kg	3.6 JP		1
Aroclor - 1260	µg/kg	330	440	2

B = Analyte in blank
U = Nondetected
J = Estimated value
P = Greater than 25% difference between Quant and Confirm GC analysis, lower of two values is reported following EPA guidelines

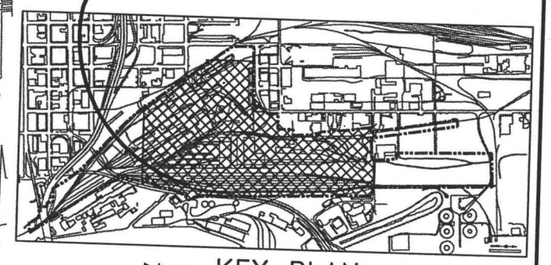
OFFICE
MW-9
GARAGE
B & B SHOPS
PRINT SHOP
DISPENSARY
SB03
SB13
POWER HOUSE
SB04
MW-16
SB05
MW-17
SMALL PARTS
SB02
MW-10
TRACTION MOTOR SHOP
MW-3
FABRICATION SHOP
MACHINE SHOP
SB08
PAINT SHOP
SB10
CAR SHOP
SB12
SB15
SB17
SB19
MILL BUILDING
MW-4
SB01
WASTEWATER TREATMENT
MW-2
WHEEL SHOP
STEEL SHOP
SB11
SB06
SB07
MW-1
SB09
SB14
SB16
SB18
MW-11

LEGEND

- SOIL BORING LOCATION
- MONITORING WELL LOCATION
- PROPERTY LINE
- STRUCTURES
- RAILROAD TRACK
- OIL PIPELINE

0 300
(SCALE IN FEET)

CONSTRUCTION AREA



KEY PLAN

SAMPLING LOCATIONS

PHASE II SITE ASSESSMENT
OMAHA SHOPS
UNION PACIFIC RAILROAD COMPANY

DRN BY JWB	DATE 11/03/92	PROJECT NO. 91MC204	FIG. NO. 4-1
CHK'D BY JAW	REVISION 0		

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5.0
SUMMARY AND CONCLUSIONS

5.1 SUMMARY

The following discussion describes the findings of the Phase II Site Assessment at the Construction Area of the Omaha Shops, including historical and background data, physical characterization, and nature and extent of contamination.

5.1.1 Site History

The Omaha Shops were in operation for approximately 100 years, with principal functions as a railroad locomotive fueling facility, repair shop, paint shop, and car body repair shop.

5.1.2 Physical Characteristics

- The Construction Area occupies about 100 acres in the central part of the Omaha Shops and includes an area that may be disturbed by future construction.

- The ground surface at the site is nearly level. Surface drainage is primarily to the east, toward the Missouri River.

- Fill ranges in thickness from 1 to 9 feet at the site, with the thickest fill on the eastern side of the site. Alluvial deposits consisting of interbedded clay, silt, sand, and gravel at thicknesses of 10 to 40 feet underlie the fill and rest on bedrock of Pennsylvanian age.

- The water table at the site varies from 3 to 15 feet below ground surface. Groundwater appears to flow northeasterly, with a calculated hydraulic gradient in the direction of flow estimated to be about 0.01 feet per foot. The alluvial sediments are expected to have a hydraulic conductivity with a range of 0.3 to 0.003 feet per day.

5.1.3 Nature and Extent of Contamination

Soil samples were analyzed for VOCs, semi-VOCs, pesticides, PCBs, petroleum hydrocarbons, metals, and asbestos. The nature and extent of soil contamination in the Construction Area at the Omaha Shops can be summarized as follows:

- Low levels of three volatile organic compounds were found in the soil samples collected from the Construction Area. The three compounds included toluene, tetrachloroethene, and methylene chloride. Toluene and tetrachloroethene were each detected in one sample at an estimated concentration of 2J μg/kg. The reported methylene chloride concentration (2J μg/kg to 15 μg/kg) are likely due to laboratory contamination.

- Low levels of semi-VOCs, primarily PAHs, were found in surface soil samples. The highest total PAH concentration reported was 48.8 μg/g at boring UPCA-SB10.

- Low levels of pesticides were found in soil samples collected from the Construction Area. With the exception of chlordane, the highest reported pesticide concentration in the soil samples was 18P μg/kg of 4,4'-DDD. Chlordane was detected in three samples at concentrations greater than 100 μg/kg (550 μg/kg, 380 μg/kg, and 360 μg/kg).

- Aroclor 1260, a PCB, was detected in two soil samples at concentrations of 330 μg/kg and 440 μg/kg.

- TPH was reported in eleven soil samples at concentrations ranging from 11 μg/kg to 3,840 μg/kg.

- Several metals were detected in the soil samples. The metals detected and their concentration ranges are summarized below:

Aluminum	870-21,000 mg/kg
Antimony	39-59 mg/kg

Arsenic	2.7J-300 mg/kg
Barium	21-800 mg/kg
Beryllium	0.56-2.4 mg/kg
Cadmium	1.3-19 mg/kg
Calcium	1,500-170,000 mg/kg
Chromium	3.1-59 mg/kg
Cobalt	2.7-37 mg/kg
Copper	3.4-400 mg/kg
Iron	4,800-71,000 mg/kg
Lead	7.3-1,600 mg/kg
Magnesium	270-16,000 mg/kg
Manganese	77-800 mg/kg
Mercury	2.2 mg/kg
Nickel	2.9-89 mg/kg
Potassium	240-4,400 mg/kg
Selenium	0.6-5.6 mg/kg
Silver	1.2-6.7 mg/kg
Sodium	37-710 mg/kg
Vanadium	10-54 mg/kg
Zinc	20-1,600 mg/kg

5.2 CONCLUSIONS

The following conclusions about the Construction Area Phase II Assessment have been made based on the currently available data:

- The low levels of VOCs, semi-VOCs, pesticides/PCBs, and TPH detected in the soil samples from the Construction Area are not likely to represent a serious threat to human health or the environment. Selected compounds are present, however, at levels that may require further evaluation.

- Most of the metals detected in the soil samples from the Construction Area are present at concentrations that are not likely to represent a serious threat to human health or the environment. Selected metals (i.e., arsenic, chromium, and lead) are present, however, at levels that may require further evaluation.

5.3 RECOMMENDATIONS

It is recommended that a screening-level risk assessment be completed to evaluate whether chemicals detected in the Construction Area could potentially pose an unacceptable risk to human health. The screening-level risk evaluation would compare contaminant concentrations to risk-based concentrations (RBCs) for hypothetical future exposure scenarios. It is recommended that the hypothetical exposure scenarios include recreational, occupational, and construction uses for the site. The RBCs would represent soil concentrations that, with conservative exposure assumptions, would not be expected to result in unacceptable human health risks. The results of the screening-level risk assessment would be used to evaluate the necessity and scope of potential corrective action for the site.

6.0
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APPENDIX
CONSTRUCTION AREA BORING LOGS

BORING LOG CA-SB01

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia — DRILLED BY: R. Herber
SURFACE ELEVATION: ____ — ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 5.0 FEET ATD ▽
WATER SURFACE DEPTH: NR FEET ____ AD ▽
COMMENTS: Offset boring due to refusal at 3.2', no HS readings due to moisture on HNu lamp.

SHEET 1 of 3
PROJECT NO. 91MC204
TASK NO. 302
DATE 3/4/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0					14" black ASPHALT		Pavement	
	S	7/12	28 29		Medium dense, black CINDERS, GRAVEL, SLAG with R.R. Wood Fibers		Fill Solvent odor BH=5-7ppm	
	S	2/2	50/2"		Hard RUBBLE		Stopped 3-3-92 Resumed 3-4-92	
					Loose, black SLUDGE with R.R. Wood Fibers		Fill	
	S	14/24	P/12" 4 1		Soft, dark greenish gray, low plastic CLAY with a trace of Sand and Cinders (CL)		Fill (P=weight of hammer)	
5						▽	Hydrocarbon odor	
					Soft, dark gray to black, low plastic, Silty CLAY (CL)		Alluvium	
	S	15/24	1 2 3 4				Hydrocarbon odor	
					Soft, dark gray, medium plastic CLAY (CL/CH) With small pockets of free Product		Alluvium	
	S	20/24	1 2 2 3				Hydrocarbon odor	
10								

BORING LOG CA-SB01

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia DRILLED BY: R. Herber
SURFACE ELEVATION: _____ ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 5.0 FEET ATD ▽
WATER SURFACE DEPTH: NR FEET _____ AD ▽
COMMENTS: Offset boring due to refusal at 3.2', no HS readings due to moisture on HNu lamp.

SHEET: 2 of 3
PROJECT NO.: 91MC204
TASK NO.: 302
DATE: 3/4/92
RIG: CME 55
METHOD: 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
10							Sheen on sample	
					Soft, dark gray, highly plastic, CLAY (CH)			
	S	24/24	2 3 3 3		With small pockets of free Product			
15								
	S	24/24	1 1 1 1				Trace of odor NOTE: Collected soil samples for	
20								

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BORING LOG CA-SB01

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia DRILLED BY: R. Herber
SURFACE ELEVATION: _____ ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 5.0 FEET ATD ▽
WATER SURFACE DEPTH: NR FEET _____ AD ▽
COMMENTS: Offset boring due to refusal at 3.2', no HS readings due to moisture on HNu lamp.

SHEET: 3 of 3
PROJECT NO.: 91MC204
TASK NO.: 302
DATE: 3/4/92
RIG: CME 55
METHOD: 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
20							chemical analysis at 1'-2', 3', 4'-6', 6'-8', 9'-11', 14'-16', 19'-21' & 24'-24.5. Bedrock-refusal	
							BOTTOM OF BORING @ 24.6'	
			30					
	S	5/7	50/1"		Hard, gray, weathered SHALE with Silt			
25								
30								

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BORING LOG CA-SB02

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY J. Garcia DRILLED BY R. Herber
SURFACE ELEVATION _____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 5.3 FEET ATD ▽
WATER SURFACE DEPTH NR FEET _____ AD ▽
COMMENTS

SHEET 1 of 3
PROJECT NO. 91MC204
TASK NO. 302
DATE 3/3/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0					4" black ASPHALT		Pavement	
					Loose, dark brown to black, medium- to coarse-grained SAND with Gravel, Cinders, and Slag		Fill	
	S	9/12	5 4	1				
					Hard RUBBLE @ 3'			
			22 8 3 2					
	S	2/24		3	Soft, dark brown, SLUDGE with Silt and Gravel		Fill Slight hydrocarbon odor and sheen	
5			2 2 4 4					
	S	0/24					No recovery 5'-7'	
			1 1 2 2		Soft, greenish gray, low plastic CLAY with R.R. Wood Fibers (CL)		Fill Hydrocarbon odor	
	S	12/24		12			BH = 1ppm, BZ = ND	
					Soft, greenish gray, medium plastic, Silty CLAY (CL/CH)		Alluvium	
			1 2 3 4					
10	S	24/24		ND				

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BORING LOG CA-SB02

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia — DRILLED BY: R. Herber
SURFACE ELEVATION: ____ — ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 5.3 — FEET ATD ▽
WATER SURFACE DEPTH: NR — FEET ____ AD ▽
COMMENTS: ____

SHEET 2 of 3
PROJECT NO. 91MC204
TASK NO. 302
DATE 3/3/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
10					Soft, greenish gray, highly plastic CLAY (CH)		Alluvium	
					Becomes firm, mottled grayish brown			
			2 3 4 3					
	S	24/24		ND				
15							NOTE: Collected soil samples for chemical analysis at 1'-2', 3'-5', 7'-9', 9'-11', 14'-16', 19'-21' & 22'-22.5.	
					Firm, gray, Sandy SILT with some Clay (ML)		Alluvium	
			6 12 12 20					
	S	16/24		ND				
20								

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BORING LOG CA-SB02

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia — DRILLED BY: R. Herber
SURFACE ELEVATION: ____ — ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 5.3 — FEET ATD ▽
WATER SURFACE DEPTH: NR — FEET ____ AD ▽
COMMENTS: ____

SHEET 3 of 3
PROJECT NO. 91MC204
TASK NO. 302
DATE 3/3/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
20					Very stiff, gray, SILTSTONE, weathered SHALE		Weathered Bedrock	
	S	4/9	53 50/3"	ND	Becomes hard		Bedrock-refusal	
							BOTTOM OF BORING @ 22.8'	
25								
30								

BORING LOG CA-SB03

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia — DRILLED BY: R. Herber
SURFACE ELEVATION: ____ — ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 2.5 — FEET ATD ▽
WATER SURFACE DEPTH: NR — FEET ____ AD ▽
COMMENTS: Offset boring once due to refusal at 3.9'.

SHEET 1 of 3
PROJECT NO. 91MC204
TASK NO. 302
DATE 3/3/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0					7" black ASPHALT		Pavement	
					Loose, black SAND with Cinders and Slag and some Bricks and Rubble		Fill	
	S	8/12	3 5	ND				
	S	6/11	12 50/5"	ND				
					Very hard, light gray LIMESTONE		Old Pavement Refusal @ 3'11"	
5					Loose, black SLAG and CINDERS		Fill	
	S	18/24	2 3 4 4	ND				
					Soft, dark gray, low plastic, Sandy CLAY (CL)		Alluvium	
					Soft, mottled grayish brown, low plastic, Silty CLAY (CL)		Slight stagnant odor Alluvium	
	S	24/24	2 3 3 3	ND				
10								

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BORING LOG CA-SB03

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia DRILLED BY: R. Herber
SURFACE ELEVATION: _____ ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 2.5 FEET ATD ▽
WATER SURFACE DEPTH: NR FEET _____ AD ▽
COMMENTS: Offset boring once due to refusal at 3.9'.

SHEET 2 of 3
PROJECT NO. 91MC204
TASK NO. 302
DATE 3/3/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
10					Firm, mottled grayish brown, highly plastic CLAY (CH)		Alluvium	
					Small black organic lenses			
					Becomes soft			
	S	24/24	1 2 3 1	ND				
15								
					Very soft, gray, Sandy SILT with a trace of Clay (ML)		Alluvium	
	S	24/24	1 1 1 1	ND			NOTE: Collected soil samples from chemical analysis at 1'-2', 3'-5', 6'-8',	
20								

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BORING LOG CA-SB03

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY J. Garcia DRILLED BY R. Herber
SURFACE ELEVATION ____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 2.5 FEET ATD ▽
WATER SURFACE DEPTH NR FEET ____ AD ▽
COMMENTS Offset boring once due to refusal at 3.9'.

SHEET 3 of 3
PROJECT NO. 91MC204
TASK NO. 302
DATE 3/3/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
20							9'-11', 14'-16', and 19'-21'.	
							Limestone fragments in sample	
							Bedrock-refusal	
	S	1/1	56/1"		Hard LIMESTONE		BOTTOM OF BORING @ 23.6'	
25								
30								

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BORING LOG CA-SB04

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia — DRILLED BY: R. Herber
SURFACE ELEVATION: — ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 12.5 FEET ATD ▽
WATER SURFACE DEPTH: NR FEET UC AD ▼
COMMENTS: UC = Upon completion of boring

SHEET 1 of 3
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/27/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0	S	12/12	8 8	ND	Loose, black SAND with Gravel, Cinders, and Slag		Fill	
					Soft, mottled grayish brown, low plastic, Silty CLAY with some Cinders and Slag (CL)		Fill	
	S	22/24	2 2 3 3	ND				
5								
					Firm, mottled greenish gray, Sandy SILT with Clay (ML)		Alluvium	
	S	18/24	4 5 5 8	ND				
					Firm, dark gray, low plastic, Silty CLAY with some Sand (CL)		Alluvium	
					Soft, dark gray, Sandy SILT with Organic Wood Fibers, and a trace of Leaves (ML)		Alluvium	
	S	15/24	2 1 2 2	ND				
10								

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BORING LOG CA-SB04

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY I. Garcia DRILLED BY R. Herber
SURFACE ELEVATION ____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 12.5 FEET ATD ▽
WATER SURFACE DEPTH NR FEET UC AD ▽
COMMENTS UC = Upon completion of boring

SHEET 2 of 3
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/27/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
10								
	S	22/24	1 2 2 4	ND	Soft, gray, highly plastic CLAY (CH)		Alluvium	
15					Mottled grayish brown			
					Becomes very soft		NOTE: Collected soil samples for chemical analysis at 0'-1', 3'-5', 6'-8', 9'-11', 14'-16', 19'-21', and 24'-26'.	
	S	24/24	1 1 1 1	ND				
20								

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BORING LOG CA-SB04

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY J. Garcia DRILLED BY R. Herber
SURFACE ELEVATION ____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 12.5 FEET ATD ▽
WATER SURFACE DEPTH NR FEET UC AD ▽
COMMENTS UC = Upon completion of boring

SHEET 3 of 3
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/27/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
20								
	S	24/24	1 1 1	ND	With small, gray, fine-grained SAND lenses			
25							BOTTOM OF BORING @ 26'	
30								

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BORING LOG CA-SB05

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY J. Garcia DRILLED BY R. Herber
SURFACE ELEVATION ____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 12.5 FEET ATD ▽
WATER SURFACE DEPTH NR FEET UC AD ▽
COMMENTS UC = Upon completion of boring

SHEET 1 of 3
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/27/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0					Loose, black SAND with Gravel, Cinders, and Slag		Fill	
							Moist	
5					Soft, grayish brown, low plastic, Silty CLAY (CL)		Alluvium	
					Becomes dark gray with some Sand			
10					Soft, dark gray, highly plastic CLAY (CH)		Alluvium	

BORING LOG CA-SB05

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia DRILLED BY: R. Herber
SURFACE ELEVATION: _____ ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 12.5 FEET ATD ▽
WATER SURFACE DEPTH: NR FEET UC AD ▽
COMMENTS: UC = Upon completion of boring

SHEET 2 of 3
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/27/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
10					WOOD Fibers			
15					Becomes very soft, gray			
20								

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BORING LOG CA-SB05

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia DRILLED BY: R. Herber
SURFACE ELEVATION: _____ ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 12.5 FEET ATD ▽
WATER SURFACE DEPTH: NR FEET: UC AD ▼
COMMENTS: UC = Upon completion of boring

SHEET: 3 of 3
PROJECT NO.: 91MC204
TASK NO.: 302
DATE: 2/27/92
RIG: CME 55
METHOD: 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
20							P = weight of hammer NOTE: Collected soil samples for chemical analysis at 0'-1', 3'-5', 6'-8', 9'-11', 14'-16', 19'-21', and 24'-26'.	
25					Soft, gray, Sandy SILT (ML)		Alluvium	
							BOTTOM OF BORING @ 26'	
30								

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BORING LOG CA-SB06

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia DRILLED BY: R. Herber
SURFACE ELEVATION: ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 6.8 FEET ATD ▽
WATER SURFACE DEPTH: NR FEET AD ▽
COMMENTS:

SHEET 1 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 3/2/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0	S	10/24	4 4	1	Loose, black SAND with Gravel, Cinders, and Slag		Fill	
	S	15/24	1 1 2 2	30	Soft, mottled greenish gray, low plastic, Silty CLAY with a trace of Gravel and Cinders (CL)		Fill BZ=1ppm BH=1ppm Hydrocarbon odor	
5	S	20/24	2 3 4 6	60	Firm, dark greenish gray, low plastic, Silty CLAY (CL)	▽	Alluvium	
10	S	20/24	2 3 2 3	7				

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BORING LOG CA-SB06

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY J. Garcia DRILLED BY R. Herber
SURFACE ELEVATION _____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 6.8 FEET ATD ▽
WATER SURFACE DEPTH NR FEET _____ AD ▽
COMMENTS

SHEET 2 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 3/2/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
10							Slight hydrocarbon odor	
							BOTTOM OF BORING @ 11'	
							NOTE: Collected soil samples for chemical analysis at 0'-1', 3'-5', 6'-8', and 9'-11'.	
15								
20								

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BORING LOG CA-SB07

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia — DRILLED BY: R. Herber
SURFACE ELEVATION: — ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 6.8 FEET ATD ▽
WATER SURFACE DEPTH: NR FEET — AD ▽
COMMENTS:

SHEET 1 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 3/2/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0					10" CONCRETE		Pavement	
	S	10/12	2 3	ND	Loose, tan or brown, medium-grained SAND with Gravel (SP)		Fill - moist	
	S	18/24	1 2 3 4	ND	Soft, light brown, medium plastic, Silty CLAY with some Gravel and Cinders (CL)		Fill	
5					Loose, brown, fine-grained SAND		Alluvium	
	S	21/24	6 5 7 7	ND		▽		
					Soft to firm, dark gray, highly plastic CLAY (CH)		Alluvium	
	S	20/24	3 3 6 4	8				
10								

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BORING LOG CA-SB07

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY J. Garcia DRILLED BY R. Herber
SURFACE ELEVATION _____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 6.8 FEET ATD ▽
WATER SURFACE DEPTH NR FEET _____ AD ▼
COMMENTS _____

SHEET 2 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 3/2/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
10					Firm, dark gray, Clayey SILT (ML)		BOTTOM OF BORING @ 11'	
							NOTE: Collected soil samples	
15								
20								

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BORING LOG CA-SB08

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia — DRILLED BY: R. Herber
SURFACE ELEVATION: — ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 9.0 FEET ATD ▽
WATER SURFACE DEPTH: NR FEET — AD ▽
COMMENTS:

SHEET 1 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/26/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0					7" CONCRETE		Pavement	
					Stiff, mottled blackish brown, low plastic, Silty CLAY (CL)		Fill	
			26 68					
	S	18/24		ND				
					Becomes firm, greenish gray			
			13 67					
	S	15/24		ND	Mottled greenish grayish brown			
5								
					Becomes soft, greenish gray			
			23 44					
	S	13/24		ND				
					Soft to firm, dark gray, low plastic, Silty CLAY (CL)		Alluvium	
					With Wood Fibers		Stagnant odor	
			23 23		Becomes soft, dark gray or black, low to medium plastic	▽		
	S	24/24		ND				
10								

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BORING LOG CA-SB08

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia DRILLED BY: R. Herber
SURFACE ELEVATION: _____ ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 9.0 FEET ATD ▽
WATER SURFACE DEPTH: NR FEET _____ AD ▽
COMMENTS: _____

SHEET 2 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/26/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
10							Slight organic odor	
							BOTTOM OF BORING @ 11'	
							NOTE: Collected soil samples for chemical analysis at 1'-3', 3'-5', 6'-8', and 9'-11'.	
15								
20								

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BORING LOG CA-SB09

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY J. Garcia DRILLED BY R. Herber
SURFACE ELEVATION _____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 7.0 FEET ATD ▽
WATER SURFACE DEPTH NR FEET UC AD ▽
COMMENTS UC = Upon completion of boring

SHEET 1 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 3/2/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0					9" black ASPHALT		Pavement	
	S	10/12	7 6	ND	Loose, dark brown SAND with Clay, Cinders, and Slag		Fill	
	S	10/24	2 1 1 1	ND	Soft, dark brown, Sandy CLAY with some Gravel and Cinders		Fill	
5					Hard RUBBLE chunk at 5'			
	S	17/24	P 1 6 5	ND			P = weight of hammer	
					Loose, dark brown, fine-grained CLAY (CH)		Alluvium	
	S	24/24	1 4 4 7	ND	Soft, gray, highly plastic CLAY (CH)		Alluvium	
10								

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BORING LOG CA-SB09

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY I. Garcia DRILLED BY R. Herber
SURFACE ELEVATION _____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 7.0 FEET ATD ▽
WATER SURFACE DEPTH NR FEET UC AD ▽
COMMENTS UC = Upon completion of boring

SHEET 2 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 3/2/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
10					Firm, light gray to gray, Clayey SILT with a trace of Organic Fibers (ML)		Alluvium	
							BOTTOM OF BORING @ 11'	
							NOTE: Collected soil samples for chemical analysis at 1'-2', 3'-5', 6'-8', and 9'-11'.	
15								
20								

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BORING LOG CA-SB10

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY I. Garcia DRILLED BY R. Herber
SURFACE ELEVATION _____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 5.6 FEET ATD ▽
WATER SURFACE DEPTH NR FEET _____ AD ▽
COMMENTS Offset boring from original location.

SHEET 1 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/26/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0					4" black ASPHALT		Pavement	
					Loose, blackish brown SAND with Cinders		Fill	
	S	6/12	1 3	2	Becomes fine-grained with R.R. Wood Fibers			
	S	6/24	12 35	25	Becomes dark gray to black - interbeds Fibers		R.R. tie	
					Saturated		Hydrocarbon odor, sheen Creosote odor	
5						▽		
	S	0/24	11 23		Dark gray SLUDGE		Fill No recovery at 6'-8'	
	S	17/24	11 22	17	With Wood Fibers		Resampled at 7'-9'	
					Soft, dark blackish gray, highly plastic CLAY (CH)		Alluvium	
	S	15/24	12 33	2			BH=1ppm Sheen on sample	
10								

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BORING LOG CA-SB10

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY J. Garcia DRILLED BY R. Herber
SURFACE ELEVATION _____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 5.6 FEET ATD ▽
WATER SURFACE DEPTH NR FEET _____ AD ▽
COMMENTS Offset boring from original location.

SHEET 2 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/26/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	RESISTANCE	HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
10							BOTTOM OF BORING @ 11'	
							NOTE: Collected soil samples for chemical analysis at 2'-3', 4'-5', 7'-9', and 9'-11'.	
15								
20								

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BORING LOG CA-SB11

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY I. Garcia DRILLED BY R. Herber
SURFACE ELEVATION _____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 9.5 FEET ATD ▽
WATER SURFACE DEPTH NR FEET _____ AD ▽
COMMENTS

SHEET 1 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/28/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0								
	S	10/12	2 4	ND	Loose, black SAND with Gravel and Cinders		Fill	
					Loose, light brown, fine-grained SAND		Fill Moist	
					Soft, brown, low plastic, Silty CLAY with some Sand, Cinders, and Slag		Fill Moist	
	S	17/24	1 1 1 4	ND				
5								
					Loose, light brown, fine-grained SAND (SP)		Fill	
	S	24/24	6 4 4 6	ND				
					Firm, mottled grayish brown, low plastic, Silty CLAY with some Sand (CL)			
					Medium dense, light brown, fine-grained SAND (SP)			
	S	24/24	4 9 15 18	ND				
10								

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BORING LOG CA-SB11

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia — DRILLED BY: R. Herber
SURFACE ELEVATION: ____ — ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 9.5 — FEET ATD ▽
WATER SURFACE DEPTH: NR — FEET ____ AD ▼
COMMENTS: ____

SHEET 2 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/28/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
10					Becomes medium-grained			
							BOTTOM OF BORING @ 11'	
							NOTE: Collected soil samples for chemical analysis at 0'-1', 3'-5', 6'-8', and 9'-11'.	
15								
20								

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BORING LOG CA-SB12

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia — DRILLED BY: R. Herber
SURFACE ELEVATION: ____ — ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 5.0 — FEET ATD ▽
WATER SURFACE DEPTH: NR — FEET ____ AD ▽
COMMENTS: ____

SHEET 1 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/26/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0					11" CONCRETE		Pavement	
			7 10		Loose, black CINDERS		Fill	
			9 9		Loose, light brown, fine-grained SAND (SP)		Fill	
	S	24/24		1				
							Moist	
			3 4					
			4 4					
	S	17/24		ND				
							Saturated	
5						▽		
			3 3		Fine- to medium-grained			
			3 5					
	S	17/24		ND				
					Soft, gray, highly plastic CLAY (CH)		Alluvium	
			2 2					
			3 3					
	S	16/24		ND				
10								

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BORING LOG CA-SB12

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia — DRILLED BY: R. Herber
SURFACE ELEVATION: ____ — ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 5.0 — FEET ATD ▽
WATER SURFACE DEPTH: NR — FEET ____ AD ▼
COMMENTS: ____

SHEET 2 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/26/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
10							BOTTOM OF BORING @ 11'	
							NOTE: Collected soil samples for chemical analysis at 1'-3', 3'-5, 6'-8', and 9'-11'.	
15								
20								

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BORING LOG CA-SB13

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia — DRILLED BY: R. Herber
SURFACE ELEVATION: ____ — ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 3.4 — FEET ATD ▽
WATER SURFACE DEPTH: NR — FEET ____ AD ▼
COMMENTS: Offset boring 3 times due to auger refusal at 8".

SHEET 1 of 3
PROJECT NO. 91MC204
TASK NO. 302
DATE 3/2/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0								
	S	8/12	8 14	ND	Loose, gray SILT with Gravel		Fill	
					Medium dense, black CINDERS and SLAG with R.R. Wood Fibers		Fill	
							Wood chunk in bottom of sample	
					Becomes SAND with Cinders and Slag			
	S	8/24	20 10 9 9	ND				
5								
					Soft, blackish gray SLUDGE		Fill	
	S	5/24	1 2 1 3	ND				
					Soft, dark gray to black, low plastic, Silty CLAY (CL)		Alluvium	
	S	20/24	1 1 2 2	1	With Pulmonate Shells			
10								

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BORING LOG CA-SB13

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY J. Garcia DRILLED BY R. Herber
SURFACE ELEVATION _____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 3.4 FEET ATD ▽
WATER SURFACE DEPTH NR FEET _____ AD ▼
COMMENTS Offset boring 3 times due to auger refusal at 8".

SHEET 2 of 3
PROJECT NO. 91MC204
TASK NO. 302
DATE 3/2/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
10					Firm, mottled greenish gray, low plastic, Silty CLAY (CL)		Alluvium	
	S	24/24	1 1 1 2	ND	Soft, mottled grayish brown, highly plastic CLAY (CH)		Alluvium	
15								
					Very soft, gray, Sandy CLAY with some fine-grained Sand lenses (CL w/SP)		Alluvium	
	S	24/24	1/24"	ND			NOTE: Collected soil samples for	
20								

BORING LOG CA-SB13

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY J. Garcia DRILLED BY R. Herber
SURFACE ELEVATION _____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 3.4 FEET ATD ▽
WATER SURFACE DEPTH NR FEET _____ AD ▽
COMMENTS Offset boring 3 times due to auger refusal at 8".

SHEET 3 of 3
PROJECT NO. 91MC204
TASK NO. 302
DATE 3/2/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
20							chemical analysis at 0'-1', 3'-5', 6'-8', 9'-11', 14'-16', 19'-21', and 24'-25'.	
							Weathered Bedrock @ 24'	
							BOTTOM OF BORING @ 25'	
	S	6/12	43 56	ND	Hard, light gray, SHALE with a trace of Siltstone			
25								
30								

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BORING LOG CA-SB14

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY J. Garcia DRILLED BY R. Herber
SURFACE ELEVATION _____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 9.0 FEET ATD ▽
WATER SURFACE DEPTH NR FEET _____ AD ▼
COMMENTS

SHEET 1 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/28/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0								
	S	12/12	3 3	ND	Loose, black SAND with Gravel and Cinders		Fill	
					Loose, light brown, fine-grained SAND (SP)		Fill	
					Soft, light brown, low plastic, Silty CLAY with Sand (CL)		Fill	
	S	20/24	1 2 2 4	ND				
					Loose, black CINDERS and SLAG		Fill	
5								
					Loose, light brown, fine-grained SAND (SP)		Fill	
	S	24/24	7 5 7 8	ND			Moist	
					Becomes very loose	▽		
	S	24/24	1 1 1 1	ND				
10								

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BORING LOG CA-SB14

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia — DRILLED BY: R. Herber
SURFACE ELEVATION: — ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 9.0 — FEET ATD ▽
WATER SURFACE DEPTH: NR — FEET — AD ▽
COMMENTS:

SHEET 2 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/28/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
10					Soft, mottled grayish brown, Sandy SILT with small Iron-oxide stains		Alluvium	
							BOTTOM OF BORING @ 11'	
							NOTE: Collected soil samples for chemical analysis at 0'-1', 3'-5', 6'-8', and 9'-11'.	
15								
20								

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BORING LOG CA-SB15

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia — DRILLED BY: R. Herber
SURFACE ELEVATION: ____ — ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 9.0 — FEET ATD ▽
WATER SURFACE DEPTH: NR — FEET ____ AD ▽
COMMENTS: Boring offset from original location.

SHEET 1 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/26/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0			7 15		Loose, dark brown to black SILT with Gravel and Cinders		Fill	
	S	16/24	12 9	ND	Orange BRICK fragments		Rubble	
					Loose, black CINDERS and SLAG		Fill	
	S	18/24	2 4 4 5	ND				
					Firm, mottled grayish brown, low plastic, Silty CLAY (CL)		Fill	
5								
	S	16/24	2 4 7 8	ND	Becomes mottled blackish gray with Slag and Gravel		Slight stagnant odor	
						▽		
	S	24/24	3 2 3 4	ND	Soft, mottled greenish gray, highly plastic CLAY (CH)		Alluvium	
10								

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BORING LOG CA-SB15

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia DRILLED BY: R. Herber
SURFACE ELEVATION: _____ ELEVATION DATUM: USGS
WATER ENTRY DEPTH: 9.0 FEET ATD ▽
WATER SURFACE DEPTH: NR FEET _____ AD ▽
COMMENTS: Boring offset from original location.

SHEET 2 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/26/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
10					With Roots and Fibers		Old swampy area	
							BOTTOM OF BORING @ 11'	
							NOTE: Collected soil samples for chemical analysis at 0'-2', 3'-5', 6'-8', and 9'-11'.	
15								
20								

BORING LOG CA-SB15A

PROJECT NAME: UPRR - OMAHA SHOP
PROJECT LOCATION: Omaha, Nebraska
LOGGED BY: J. Garcia — DRILLED BY: R. Herber
SURFACE ELEVATION: ____ — ELEVATION DATUM: USGS
WATER ENTRY DEPTH: None — FEET ATD ▽
WATER SURFACE DEPTH: ____ — FEET ____ AD ▼
COMMENTS: First attempt at UPCA-SB15.

SHEET 1 of 1
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/26/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0					3" black ASPHALT		Pavement	
					CONCRETE		Old footing	
5					Possible rebar		Refusal to auger	
							BOTTOM OF BORING @ 7.5'	
10								

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BORING LOG CA-SB16

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY J. Garcia DRILLED BY R. Herber
SURFACE ELEVATION ____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 7.5 FEET ATD ▽
WATER SURFACE DEPTH NR FEET ____ AD ▽
COMMENTS ____

SHEET 1 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/28/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0	S	10/12	2 3	ND	Loose, black SAND with Gravel, Cinders, and Slag		Fill	
					Loose, light brown, fine-grained SAND (SP)		Fill	
					Medium dense, light brown, fine-grained SAND (SP)		Alluvium	
	S	24/24	3 8 8 9	ND			Alluvium	
					2"-thick Sandy CLAY lense			
5					Becomes loose to medium dense			
	S	24/24	5 6 6 4	ND				
	S	24/24	9 11 13 7	ND				
10								

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BORING LOG CA-SB16

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY J. Garcia DRILLED BY R. Herber
SURFACE ELEVATION _____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 7.5 FEET ATD ▽
WATER SURFACE DEPTH NR FEET _____ AD ▽
COMMENTS _____

SHEET 2 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/28/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
10					Becomes medium-grained			
							BOTTOM OF BORING @ 11'	
							NOTE: Collected soil samples for chemical analysis at 0'-1', 3'-5', 6'-8', and 9'-11.	
15								
20								

BORING LOG CA-SB17

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY J. Garcia DRILLED BY R. Herber
SURFACE ELEVATION ____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 8.5 FEET ATD ▽
WATER SURFACE DEPTH NR FEET ____ AD ▽
COMMENTS

SHEET 1 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/25/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0					8" black ASPHALT		Pavement	
					Ballast with a trace of Clayey SILT		Fill	
					Firm, light brown, low plastic, Silty CLAY (CL)		Fill	
	S	8/24	5 4 6 6	ND			Moist BZ=ND	
5								
					Soft, light brown, Clayey SILT (ML)		Fill	
	S	12/24	1 1 1 1	ND		▽		
					Loose, gray, fine- to medium-grained SAND (SP)		Alluvium	
	S	17/24	1 4 5 5	ND				
10								

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BORING LOG CA-SB17

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY J. Garcia DRILLED BY R. Herber
SURFACE ELEVATION ____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 8.5 FEET ATD ▽
WATER SURFACE DEPTH NR FEET ____ AD ▽
COMMENTS ____

SHEET 2 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/25/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
10							BOTTOM OF BORING @ 11'	
							NOTE: Collected soil samples for chemical analysis at 2.5'-4.5', 6'-8', and 9'-11.	
15								
20								

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BORING LOG CA-SB18

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY J. Garcia DRILLED BY R. Herber
SURFACE ELEVATION ____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 7.2 FEET ATD ▽
WATER SURFACE DEPTH NR FEET ____ AD ▽
COMMENTS ____

SHEET 1 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/28/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0	S	12/12	8 10	ND	Loose, black SAND with Gravel, Cinders, and Slag		Fill	
					Soft, brown, Sandy SILT (ML)		Fill	
	S	13/24	1 2 3 4	ND				
					Loose, brown, fine-grained SAND (SP)		Alluvium	
5								
					Soft, brown, Silty SAND (SM)		Alluvium	
	S	24/24	3 3 5 7	ND	With fine-grained Sand lenses			
					Loose, brown, fine-grained SAND		Alluvium	
	S	24/24	3 3 5 6	ND				
10								

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BORING LOG CA-SB18

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY J. Garcia DRILLED BY R. Herber
SURFACE ELEVATION ____ ELEVATION DATUM USGS
WATER ENTRY DEPTH 7.2 FEET ATD ▽
WATER SURFACE DEPTH NR FEET ____ AD ▼
COMMENTS

SHEET 2 of 2
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/28/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
10					Becomes medium -grained			
							BOTTOM OF BORING @ 11'	
							NOTE: Collected soil samples for chemical analysis at 0'-1', 3'-5', 6'-8', and 9'-11.	
15								
20								

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BORING LOG CA-SB19

PROJECT NAME UPRR - OMAHA SHOP
PROJECT LOCATION Omaha, Nebraska
LOGGED BY J. Garcia DRILLED BY R. Herber
SURFACE ELEVATION ____ ELEVATION DATUM USGS
WATER ENTRY DEPTH None FEET ATD ▽
WATER SURFACE DEPTH NR FEET ____ AD ▽
COMMENTS ____

SHEET 1 of 1
PROJECT NO. 91MC204
TASK NO. 302
DATE 2/25/92
RIG CME 55
METHOD 4.25-inch ID HSA

DEPTH, ft.	SAMPLE TYPE	SAMPLE RECOVERY	SAMPLE RESISTANCE	SAMPLE HS, PPM	DESCRIPTION	SYMBOL	FIELD NOTES	ELEVATION
0	S	9/12	28/12"	ND	Loose to medium dense, black CLAY with Gravel, Cinders, and Slag		Fill	
	S	12/18	19 8 6		Soft, mottled black and light brown, low plastic, Silty CLAY (CL)		Fill BZ=ND	
5	S	2/18	10 23 25	ND	Medium dense, light gray, fine-grained, Silty SAND (SM)		Alluvium	
					Loose, light gray, fine-grained SAND with lenses of Sandy SILT (SP w/ML)		Alluvium	
10	S	17/24	1 4 7 9	ND				
							BOTTOM OF BORING @ 11.5'	
							NOTE: Collected soil samples for chemical analysis at 0'-1', 3'-4.5', and 9.5'-11.5'.	
15								
20								
25								

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